UNITED NATIONS CONFERENCE
ON TRADE AND DEVELOPMENT

Distr.
GENERAL

UNCTAD/DSD/SEU/Misc.5
12 October 1993

ENGLISH only

THE AGRICULTURAL SECTOR OF THE WEST BANK AND THE GAZA STRIP

Study prepared by an UNCTAD consultant*

---

* This study constitutes Part One of the contribution made by Dr. Hisham Awartani (Al-Najah National University, West Bank) to the intersectoral project of the UNCTAD secretariat on "Prospects for sustained development of the Palestinian economy in the West Bank and Gaza Strip". The opinions expressed in this study are those of the author and do not necessarily reflect the views of the Secretariat of the United Nations. The designations used and the presentation of the material do not imply the expression of any opinion whatsoever by the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

CONTENTS

Page

List of statistical tables 6
List of abbreviations 9
Preface 10

Chapter I - THE ROLE OF AGRICULTURE IN THE PALESTINIAN SOCIETY 11

A. The strategic implications of agriculture 11

B. Relative share of agriculture in the OPT economy 12

- 1. Income from agriculture 12
- 2. Growth rates 12
- 3. Seasonal variations in income 13
- 4. Relative share in GDP 14
- 5. Agricultural exports 15
- 6. Balance of trade implications 15

C. Intersectoral linkages 16

- 1. Income 16
- 2. Food 16
- 3. Employment 16
- 4. Skills and level of technology 16

Chapter II - FOOD CONSUMPTION AND NUTRITIONAL STATUS 18

A. Agriculture as a source of food supply 18

B. Trends in expenditure on agricultural commodities 18

C. Overall nutritional status 18

D. Estimates of consumption 19

E. Sources of supply 19

F. Qualitative deficiencies 20

G. Consumption patterns of major farm products 20

- 1. Wheat flour 20
- 2. Oils 21
- 3. Vegetables 21
- 4. Citrus 21
- 5. Grapes 22
- 6. Almonds 22
- 7. Meat 22
- 8. Fish 23
- 9. Eggs 23
- 10. Dairy products 23

CONTENTS (continued)

Page

Chapter III - STRUCTURE AND PATTERN OF OUTPUT 25

A. Sectoral composition of output 25

B. Trend of changes in cultivated area 25

C. Irrigated farming 27

D. Sectoral changes in acreage and output 28

   1. Field crops 28
   2. Vegetables 29
   3. Fruit trees 31

      (a) Olives 31
      (b) Citrus 33
      (c) Grapes 34
      (d) Other transformations in the fruit tree branch . . . 35

E. Livestock branches 37

   1. Sheep and goats 38
   2. Cattle 39
   3. Poultry 40
   4. Fishing 41

Chapter IV - LAND, EMPLOYMENT AND PRODUCTIVITY 42

A. Structure of land ownership 42

B. Patterns of tenure 43

C. The role of tenancy 43

D. Productivity and technological change 44

   1. Changes in land yields 44
   2. Labour productivity 47

E. Employment in agriculture 47

   1. Composition of the agricultural labour force 49
   2. Income situation 49
   3. The impact of labour migration on rural communities . . . 50

Chapter V - SUPPORTIVE INSTITUTIONS 52

A. Agricultural education 52

B. Agricultural extension 53

CONTENTS (continued)

Page

C. Agricultural research 54

D. Agricultural budget 55

E. Agricultural cooperatives 55

1. Cooperatives in the West Bank 55
2. Agricultural cooperatives in the Gaza Strip 58

F. Agricultural finance 58

1. The Jordanian-Palestinian Joint Committee 59
2. Non-governmental organizations 60
3. Local credit institutions 61

G. Alternative agricultural institutions 62

1. Main institutions 62

(a) The Palestine Agricultural Relief Committee 62
(b) The Technical Centre for Agricultural Services . . . 62
(c) Applied Research Institute-Jerusalem 63
(d) The Development Work Centre 63

2. Registration status 63
3. Management of development centres 63
4. Sources of funding 63

Chapter VI - MARKETING OF FARM PRODUCE 64

A. Marketing infrastructure 64

1. The organizational infrastructure 64
2. The physical marketing infrastructure 65

B. Local markets 65

1. Dynamics of supply and demand in local markets 65
2. Institutional obstacles in local markets 66

C. External markets 67

1. Agricultural trade with Israel 67

(a) The impact of subsidies on OPT trade with Israel . . 68
(b) Volume of agricultural trade with Israel 69
(c) Israeli trade policies after the intifada 70

CONTENTS (continued)

Page

2. Trade with and across Jordan 71
    (a) Factors affecting trade with Jordan and traditional markets 71
    (b) Volume of exports to and across Jordan 72

3. Agricultural exports to Western Europe 74
    (a) Exporting to Europe through Israeli firms 74
    (b) Direct exports to Europe 74
    (c) Evaluation and prospects 75

4. Exports to Eastern European countries 75

D. Agro-industries 76

1. Olive presses 76
2. Citrus packing plants 77
3. Food processing firms 77
4. Olive pickling 77
5. Cigarettes 77
6. Dairy plants 78

Chapter VII - PROPOSALS FOR THE IMMEDIATE IMPROVEMENT OF THE AGRICULTURAL SECTOR 79

A. Strategic objectives of agricultural development 79

B. Recommended policies and projects 80

1. Planning of agricultural development 80
2. Credit 82
3. Education and research 83
4. Land 84
5. Water 85
6. Agricultural trade 86
7. Infrastructure and auxiliary services 88
8. Diversification of cropping patterns 90
9. Livestock 90
10. Subsidy components 91
11. Cooperatives 92

Notes 94

Statistical tables 98

List of statistical tables

Chapter I tables

Table 1-1 Output and income from agriculture
Table 1-2 Average annual growth rates, selected years
Table 1-3 The relative share of agriculture in GDP selected years
Table 1-4 The relative share of agriculture in GDP, 1987
Table 1-5 Relative significance of agricultural exports, selected years
Table 1-6 External agricultural trade, selected years

Chapter II tables

Table 2-1 Rates of change in private consumption, selected years expenditure on agricultural goods
Table 2-2 Per capita dietary levels, 1969 and 1988
Table 2-3 Consumption and production data of major food items, 1987
Table 2-4 Fruit and vegetables imported from Israel, selected years
Table 2-5 Commodity breakdown of farm produce imported from Israel, 1985/1986
Table 2-6 Meat consumption, 1971 and 1987
Table 2-7 Egg consumption, 1971 and 1987
Table 2-8 Consumption of dairy products, 1971 and 1987

Chapter III tables

Table 3-1 Value of agricultural output, by sector, selected years
Table 3-2 Trends in cultivated area, selected years
Table 3-3 Area under irrigation, selected years
Table 3-4 Water consumption - 1989
Table 3-5 Irrigation techniques - 1990
Table 3-6 Secular trends in field crops production, 1966, 1978, 1985 and 1989
Table 3-7 Changes in area of vegetables in the West Bank, selected years

Table 3-8 Secular trends in production of vegetables, selected years

Table 3-9 Secular trends in fruit tree area, output and share in total agricultural production value, selected years

Table 3-10 Secular trends in West Bank olives area, average annual output, and share in agricultural output value, selected years

Table 3-11 Growth trend of olive orchards in the West Bank, 1978-1989

Table 3-12 Secular trends in citrus area and share in agricultural output value, selected years

Table 3-13 Secular trends in vineyard area, output and share in agricultural output value, selected years

Table 3-14 Share of livestock branches in the value of agricultural output, 1989 and 1990

Table 3-15 Population of sheep and goats, selected years

Table 3-16 Population of cattle, selected years

Table 3-17 Growth trends in the poultry industry

Chapter IV tables

Table 4-1 Number of holdings and their distribution by size, 1953 and 1965

Table 4-2 Distribution of West Bank agricultural land by size of holding, 1970

Table 4-3 Land ownership in the Gaza Strip, 1968

Table 4-4 Patterns of land tenureship in the West Bank, 1965

Table 4-5 Percentage of households owning farms, September 1967

Table 4-6 Changes in yields of major crops in the West Bank, selected years

Table 4-7 Rates of purchased inputs, selected years

Table 4-8 Agricultural workers by years of schooling, 1986

Table 4-9 Labour productivity trends, 1970-1986

Table 4-10 Growth rate in value added per worker, 1970-1985

Table 4-11 Secular trends in agricultural employment, selected years

Table 4-12 Persons employed in agriculture by status, selected years

Table 4-13 Changes in the prices of major inputs and in agricultural produce, 1967, 1991

Table 4-14 Average income of workers in agriculture, 1967-1990

Chapter V tables

Table 5-1 West Bank Department of Agriculture Budget

Table 5-2 Budget of Agriculture Department in the Gaza Strip, 1991

Table 5-3 West Bank cooperatives, 1966

Table 5-4 West Bank cooperatives, 1989

Table 5-5 Agricultural cooperatives in the Gaza Strip, 1990

Table 5-6 Sources of agricultural finance in Jordan - 1969

Chapter VI tables

Table 6-1 Total supply, consumption, and surplus of fruit and vegetables, selected years

Table 6-2 OPT agricultural trade with Israel, selected years

Table 6-3 Trends of average annual production growth in Jordan, 1973-1988

Table 6-4 Entry to Jordan of agricultural goods across the bridges, 1981-1989

Table 6-5 Number of agro-industrial firms, by type, 1983

List of abbreviations

CBS	Israel Central Bureau of Statistics
GS	Gaza Strip
JD	Jordanian dinar
m^3	Cubic metres
NIS	New Israeli shekel
n.a.	Not applicable (in tables)
OPT	Occupied Palestinian territory
Thous.	Thousand
WB	West Bank
$	United States dollars
..	Data not available (in tables)
-	Equals nil (in tables)

Preface

(i) As part of the work programme of the UNCTAD secretariat pursuant to resolution 239 (XXIII) of the Trade and Development Board and resolution 44/174 of the General Assembly, the UNCTAD secretariat initiated, in 1990/91, an in-depth intersectoral project on the economy of the West Bank and the Gaza Strip. Part One of the project deals with a comprehensive assessment of the economic and social situation in the West Bank and the Gaza Strip, the main impediments to sustained growth and development, pressing needs and corresponding measures for immediate action to promote recovery. Part Two of the project constitutes an in-depth analysis of prospects under different scenarios for the future development of the Palestinian economy. Part Three of the project is intended to provide a strategy framework and policy guidelines for the revival and sustained future development of the Palestinian economy in the West Bank and the Gaza Strip.

(ii) For the implementation of the project, a total of 25 in-depth studies were initiated at the field level covering economic and social sectors and issues. Concurrently, and in order to facilitate the technical aspects of work on Parts Two and Three, the UNCTAD secretariat has also prepared a quantitative framework examination of future options and prospects under several scenarios. The summary findings of Part One of the field studies, in particular an identification of pressing needs and corresponding feasible measures for immediate action, were presented for further consideration by an expert group meeting (held in May 1992). The report of that meeting is being published separately, as is the UNCTAD secretariat's quantitative study.

(iii) In order to provide more detailed substantive background to the findings and recommendations of the expert group meeting, and to enable donors to develop further their programmes of assistance to the Palestinian people, the first part of a selected number of field studies commissioned under this project are being published in a special study series on Palestinian economic and social development. The second and third parts of the field studies will be subsequently consolidated by the UNCTAD secretariat. The present document constitutes Part One of the study prepared by a consultant, Dr. Hisham Awartani (Al-Najah National University, West Bank), on the agricultural sector in the West Bank and the Gaza Strip.

Chapter I

THE ROLE OF AGRICULTURE IN THE PALESTINIAN SOCIETY

Agriculture plays a unique role in the life of the Palestinian people in the West Bank and Gaza Strip (hereafter referred to as the occupied Palestinian territory - OPT). This role is clearly reflected in such conventional indicators as those of the relative share of agriculture in the Palestinian economy (e.g. its contribution to the gross domestic product, its share in the employed labour force, and its role in export trade). Furthermore, agriculture plays a pivotal role in the economy by virtue of its strong intersectoral linkages.

But the peculiar role of agriculture in the territory extends in effect far beyond the above-mentioned criteria. As a people whose survival on their land has always been in jeopardy, Palestinians realize that agriculture bears heavily on some issues of strategic significance to their sustained struggle for survival. Such issues include, most importantly, natural resource conflicts (especially in regard to land and water), and attaining a satisfactory level of food security. This chapter will shed light on the economic and strategic implications of agriculture, whereas its nutritional role will be evaluated in the next chapter.

A. The strategic implications of agriculture

Agriculture is the primary user of land and water resources, both of which lie at the heart of the Arab-Israeli conflict. The share of land under cultivation amounts to 57 per cent of the total area in the Gaza Strip, and 36 per cent in the West Bank. Around 75 to 85 per cent of all usable water is consumed by agriculture.

Ever since the intention of setting up a national homeland for the Jewish people in Palestine was declared, nearly a century ago, it has been clear that the fulfilment of this dream was heavily contingent on access to land and water resources. It is against this background that the central ideal of "return to the land" was established.

The drive to acquire land in Palestine prior to 1948 took several forms and resulted in the weakening of the Arab farming base. In contrast, Jewish farmers were given access to the means required to cultivate whatever land was expropriated from indigenous owners. 1/ As a result of those policies, the percentage of cultivated land owned by Jews in Palestine amounted, by 1948, to 20 per cent of the total, although their share of all land was only 5.6 per cent. 2/

An important feature of the conflict over land prior to 1948 was the vast differences in farming patterns between Jews and Palestinians. Jewish farmers focused on high-value crops and livestock, whereas the latter adopted labour-intensive and mostly family-oriented patterns of production. As a prominent example of this trend, Jewish farmers owned 49 per cent of all citrus orchards in the country, when their share of total land area amounted to less than 6 per cent. 3/

Palestinian agriculture prior to 1948 lagged behind that of Jews, not only in cropping patterns, but even more so in production and marketing technology. This was of course a direct result of many profound differences between both sets of farmers in regard to the level of supportive services available to each. Undoubtedly, many differences ultimately arose as a direct result of policies bearing on credit, educational facilities and pricing mechanisms. It is, however, important to note that the interaction between Palestinian and Jewish farmers provided the former with an opportunity to achieve tangible improvements in their production skills, especially when compared with other farmers in neighbouring Arab countries. This availed Palestinians of an important comparative advantage in subsequent years, when their agriculture became increasingly market-oriented.

For obvious reasons, agriculture in the West Bank and Gaza Strip lost much of its political setting after the temporary halt in the Arab-Jewish conflict over land during the period of 1950-1967. However, the situation changed drastically after June 1967 when Israel gained nearly uncontested authority in the newly occupied West Bank and Gaza Strip. This gave Israel access to more land and water resources and the Israeli Government instituted a wide range of restrictive measures and policies aimed, in essence, at pre-empting the profitability of those farming patterns which conflicted with Israeli interests.

B. Relative share of agriculture in the OPT economy

The relative importance of agriculture in the economy of the occupied Palestinian territory has undergone profound changes during the past three decades. This section is aimed at ascertaining income and output in agriculture, and evaluating the role of this sector in external trade and the balance of payments.

1. Income from agriculture

Income from agriculture is a function of output value and production costs. As the value of agricultural output is subject to sharp fluctuations, quoting income estimates for individual seasons may involve a significant bias. This kind of seasonal fluctuation can be greatly reduced by computing output value and income on a moving average basis. The following estimates are based on the average value of income for two consecutive seasons.

Agricultural income in the occupied Palestinian territory for the last two recorded seasons (1988 and 1989) is estimated at $412 million per annum, 79 per cent of it generated in the West Bank. Table 1-1 shows that OPT agricultural income in 1988-1989 amounted to 41 per cent of that of Israel and 149 per cent of Jordan's income. The considerably higher agricultural income in Israel is due mainly to higher productivity and greater output. A further reason is the orientation of Israeli agriculture towards high-value crops, considerably more so than in OPT agriculture.

2. Growth rates

Income from agriculture has been heavily influenced during the occupation period by a number of far-reaching developments bearing on the production and marketing aspects of all major farming patterns. The overall impact of these developments was clearly positive during the early years of occupation. Average growth rates of the value of agricultural output and net income originating in agriculture for both the West Bank and Gaza Strip amounted to 12-13 per cent during 1969 to 1975 (see table 1-2).

Growth rates of output and income remained at a relatively high level in the West Bank during the latter part of the 1970s, whereas they dropped sharply to negative values in the Gaza Strip. Growth declined more steeply during 1980-1985, especially in the West Bank, and then picked up again during 1985-1989.

The rapid growth achieved during the early years of the occupation period is attributed to numerous factors, most importantly, the following:

(a) Productivity rose at markedly rapid rates, which in turn was a result of substantial improvements in the levels of production technology.

(b) A relatively vast marketing potential was opened for Palestinian produce in neighbouring countries, particularly in Jordan, Iraq and Iran (Islamic Republic of).

(c) An important part of the noticeable growth in agriculture, as revealed in official Israeli data, is simply due to taking 1967/68 as the base year for comparison purposes. That year was unusual in two important ways. Being the first year after the onset of Israeli occupation, it was characterized by extreme unrest and a nearly total collapse of institutions supportive of production and marketing operations. Secondly, from a weather perspective it was not an optimal year, since it was characterized by lower than average precipitation. When the period 1968-1970 is taken as a base, the annual growth rate for the West Bank during 1967-1984 is calculated at 6.5 per cent.

Growth rates during the late 1970s dropped markedly in comparison to earlier years. This was due mainly to a slowdown in productivity growth, as breakthroughs were already exhausted. Furthermore, OPT growers started to encounter increasing problems in disposing of their surpluses in export markets, and even in the home market.

Occasional severe drops in output and income during the 1980s were precipitated by adverse transformations in the economics of most commercial farming patterns. This was mainly due to a worsening of the terms of agricultural trade under which OPT growers had to operate in domestic and export markets. Furthermore, the price structure of farm products and production inputs had changed drastically, leaving markedly narrower profit margins for producers.

3. Seasonal variations in income

The value of agricultural output is characterized by a marked degree of seasonal fluctuation, even when measured at constant prices. This phenomenon is much more visible in the West Bank than in the Gaza Strip. In both areas, seasonal fluctuation in output value is attributed to sharp variations in sale prices.

In the case of the West Bank, however, the major reason for the marked variations relates to the predominance of dry farming patterns. Yields in this case are heavily dependent on violent fluctuations in the volume of precipitation as well as some other climatic attributes. While weather variations bear on most field crops and fruit trees, they are particularly significant in the case of olives, which account for approximately 20 per cent of the West Bank's agricultural output. Cyclical variations are greatly reduced when olives are excluded from agricultural income.

Wide variations in income earned by farmers in rainfed areas have had grave consequences for their living standards, and have made farmers excessively vulnerable to climatic fluctuations. Farmers have become increasingly motivated to seek supplementary or alternative sources of income. They have also become overly conservative in accepting new technological innovations, for fear of unforeseen and possibly disastrous risks.

4. Relative share in GDP

Despite the fact that agriculture was the chief employer and the major source of subsistence for most peasant families in the West Bank, this sector did not account in 1966 for more than 18 per cent of gross domestic product. Agriculture's contribution to the economy of the Gaza Strip, on the other hand, was significantly higher, amounting to around 34 per cent of its GDP.

The share of agriculture in the West Bank's GDP rose considerably during the earlier part of the occupation era, as compared with the last year prior to its occupation, i.e., from 17.9 per cent to 38.2 per cent (see table 1-3). This seems to have been stimulated by the abrupt termination or severe drop in the relatively developed level of service sectors in the wake of Israeli occupation. Furthermore, this trend was further augmented by rapid rises in productivity and greater commercialization of agriculture.

In contrast to the West Bank, the share of agriculture in the Gaza Strip's GDP showed a marked decline from 34 per cent to 27 per cent during the same period. In this case, the drop was possibly due to a sharp rise in income accruing to service sectors and small household industries.

Agriculture's relative contribution to the territory's GDP has decreased during the past two decades. The share of this sector in the West Bank's GDP dropped from 38.2 per cent in the late 1960s to 20.2 per cent in the mid-1980s (see table 1-3). The drop in the Gaza Strip during the same period was also large, from 27 per cent to 16.6 per cent.

In addition to severe marketing problems and lower profitability, the declining relative importance of agriculture during the latter part of the occupation period is attributed to higher rates of growth achieved in few other economic sectors, notably services. In particular, there has been a profound expansion in trading branches, transportation, power supply, and in many other service sectors.

Compared with countries in the region, however, the relative share of agriculture in the territory's GDP is still high. In particular, it is considerably higher than the immediate neighbours, Jordan and Israel (see table 1-4). This is understandable as the industrial sector in those economies has assumed its role and increased its share along with other secondary and tertiary sectors.

5. Agricultural exports

Agriculture played a relatively significant role in the external trade of the West Bank and Gaza Strip prior to Israeli occupation in 1967. Each of the two areas had its own comparative advantage which entailed positive consequences for trade. The West Bank took advantage of the unique climatic conditions in the Jordan Valley, which became a vast natural greenhouse producing large quantities of off-season vegetables and fruits.

Jordan's total exports in 1966 amounted to JD8.76 million, of which rock phosphates accounted for 35 per cent. Agricultural exports, on the other hand, amounted to 55 per cent of the total. 4/ Although no separate trade data were published for the West Bank, agricultural exports are estimated to have accounted then for no less than two thirds of total exported farm products. The West Bank's non-agricultural exports were very limited, comprising mostly negligible quantities of tourist articles.

As typical of coastal areas in the occupied Palestinian territory, the Gaza Strip developed a vigorous citrus sector during 1950-1967. The area under citrus cultivation expanded from 6,200 dunums in 1953 to nearly 56,000 dunums in 1965. 5/ The bulk of all citrus fruits were exported, mainly to East European countries. Citrus exports rose by around five times during 1957-1962, and increased further during the early 1960s. 6/

Agricultural exports witnessed a considerable increase during 1968-1985, reaching a peak in the early 1980s, a total of $137 million for the OPT as a whole (see table 1-5). This was a direct result of a pronounced rise in the value of agricultural output and, no less importantly, to the fairly relaxed terms of OPT trade which prevailed during most of that period. The value of agricultural exports, however, had decreased at a fast rate since the mid-1980s, clearly in direct response to adverse changes in output and to deteriorating terms of trade.

Despite their significance in absolute terms, the relative share of agricultural exports has declined noticeably in recent years, especially in the West Bank (see table 1-5). However, on the average for 1981-1987, agriculture accounted for 31.9 per cent of total exports in the West Bank and 25.9 per cent in the Gaza Strip. A comparison of export data for both areas reveals also that agriculture's share in exports was noticeably stable in the Gaza Strip, whereas it displayed marked variations in the West Bank. Again, this is attributed mainly to the impact of sharp cyclical variations in the olive crop.

6. Balance of trade implications

The net impact of agricultural trade on the balance of trade reflects the magnitude of both exports and imports. Exports increased considerably during the occupation period, but imports of farm products have also risen substantially. Higher consumption was buttressed by greater disposable income, and the unconditional opening of domestic markets to Israeli farm produce pouring across the "green line". Table 1-6 portrays the situation in regard to agricultural external trade as it has developed during the occupation period. The table shows that external agricultural trade was characterized by a net positive balance in both areas for most years during the 1970s and early 1980s. After 1982, however, agricultural trade started to suffer serious problems and constraints, resulting in a steady and marked deficit, amounting in 1986 to over $30 million.

C. Intersectoral linkages

A realistic assessment of the relative role of agriculture in the life of Palestinian society should take into account this sector's strong bearing on aspects of the economy other than those mentioned above. The following is a brief exposition of those linkages.

1. Income

Farming is practised as a major or supplemental source of income by a vast proportion of the West Bank's households; this ratio stood at 42 per cent, as compared to only 14 per cent in the Gaza Strip. 7/ It is clear, therefore, that changes in productivity and profitability of agriculture can have a direct impact on a large proportion of Palestinian society.

2. Food

The broad impact of agriculture on the Palestinian population in the West Bank and Gaza Strip is manifested in ways other than income. Despite the pronounced degree of commercialization in most farming patterns, agriculture still plays a fundamental role in directly providing farm families with part of their food supply. It is largely for this reason that olives are grown on an extensive scale, with only secondary concern to their meagre profit margin.

3. Employment

By playing the role of residual employer of labour, agriculture has helped provide other sectors of the economy with additional workers when needed, and alternatively, helped in absorbing part of excess labour when the labour market was in a slump. Furthermore, agriculture provides part-time employment to some strata of the labour force which otherwise would remain largely redundant, i.e., rural women and old people, and school-age children.

The potential role of agriculture in the labour market goes far beyond absorbing the residual labour force. In a country where the indigenous absorptive capacity of labour is very weak, agriculture is viewed as one of the main sectors where more employment could possibly be generated.

4. Skills and level of technology

The fast pace of technological change in farming techniques has stimulated a steady improvement in the level of skills and related attitudes in rural communities. This has been particularly felt in areas of intensive farming patterns (e.g. greenhouse vegetables, poultry, and sheep) where the entire community has been exposed to a profound educational process. Even members of families who have traditionally been distant from modern technology, like rural women and men with low levels of education, have been pulled into the spiral of technological change in agriculture. While a lot more is needed to accelerate this process, farmers are already predisposed to faster technological change.

The changing level of skills deemed necessary in modern Palestinian agriculture has in fact precipitated an important change in the nature of the farm labour force. Departing from the stereotype of a relatively old and uneducated labour force, the new generation of Palestinian farmers is young and educated. Again, this subtle change in the quality of farming manpower is likely to entail positive consequences for productivity and competitiveness of Palestinian growers.

Greater commercialization and higher levels of technology in Palestinian agriculture have also contributed to a pronounced degree of demographic stability in rural areas. Migration from rural areas to neighbouring urban centres is untypically low for a Middle Eastern country. This is certainly an important positive change for a country which looks forward to rehabilitating a much greater population.

Chapter II

FOOD CONSUMPTION AND NUTRITIONAL STATUS

A. Agriculture as a source of food supply

The role of agriculture as a source of food supply for Palestinians in the occupied Palestinian territory carries great significance, especially under current circumstances. As typical in most peasant forms of agriculture, the bulk of farm produce is consumed by rural families and nearby urban communities, leaving surpluses of only a few products. The relative significance of domestic consumption is clearly indicated by the fact that the value of agricultural goods consumed in domestic markets, whether imported or locally produced, exceeds the value of total agricultural output by 18 per cent in the West Bank and 14 per cent in the Gaza Strip. 8/

There are three aspects worth monitoring in regard to the status of food consumption and the role of agriculture in the occupied Palestinian territory, namely, minimizing dependency on external sources, meeting anticipated demand for food in the wake of a peaceful settlement, and safeguarding against certain forms of nutritional deficiency.

B. Trends in expenditure on agricultural commodities

It is possible to gain an insight into the trends of food consumption during the occupation period from aggregate data on private consumption expenditure. Table 2-1 shows that domestic private consumption expenditure on agricultural goods rose sharply during the early years of occupation (1969-1972), then slowed down through the middle and late 1970s. The overall rate of increase in expenditure on agricultural goods for 1969-1986 was 5.9 per cent. The rate of increase in expenditure on agricultural goods was lower than that of industrial goods (7.2 per cent) and total private consumption expenditure (6.2 per cent).

The excessively high rate of growth in expenditure on agricultural goods during the first few years is an indication of the low level of food intake during previous years. It should be remembered that per capita income in 1966 was estimated at $213 for the West Bank and $108 for the Gaza Strip. At such low levels, the income elasticity of demand for food is usually high.

Counting on an overall annual rate of population growth during 1969-1986 of 2 per cent in the West Bank and 2.8 per cent in the Gaza Strip, 9/ the rate of growth in per capita expenditure on agricultural goods is calculated at 4.2 per cent for the West Bank and 2 per cent for the Gaza Strip. These estimates are useful for projecting expenditure on consumption for the future, and they provide another indicator of the relatively inferior level of food consumption in the Gaza Strip.

C. Overall nutritional status

All available data on nutritional status in the OPT are based on family surveys conducted by the Department of Statistics in the "Civil Administration", and published by the Central Bureau of Statistics. Many experts believe that due to the sensitivity of such information, OPT nutritional data are biased upwards. Although it is difficult to substantiate such assertions, in the absence of more reliable sources, it is still possible to rely on published data as indicators of trends of change.

Based on the latest data available on the nutritional status of the OPT (1988), table 2-2 shows that the occupied territory has achieved considerable improvement in its dietary levels during the past 20 years. Caloric intake has risen by 24 per cent in the West Bank and 15 per cent in the Gaza Strip, and fats by 46 per cent and 61 per cent, respectively. The rise in animal protein intake has been especially high (by around 100 per cent).

Despite a pronounced rise in OPT nutritional standards, the above-mentioned data indicate clearly that OPT residents are still lagging markedly behind Israelis. The difference is most pronounced in the case of animal proteins and fats. Furthermore, it is noted that the nutritional level in the Gaza Strip lags behind that of the West Bank, although the gap between the two areas had narrowed during the period 1969-1988.

D. Estimates of consumption

The demand for food has witnessed a marked rise during the past two decades, mainly in response to rising levels of income and living standards. The rise was relatively more pronounced during the earlier part of the occupation period when food intake was still low, especially in the Gaza Strip. Table 2-3 provides estimates of the quantities demanded of all major food items, together with the quantities produced locally. A detailed analysis of the supply and demand of major items will be presented later in this chapter.

E. Sources of supply

Local production is the main source for the majority of food items. Table 2-3 shows that the OPT is more than self-sufficient in regard to vegetables, citrus, grapes, olive oil and mutton. It still suffers from deficits in eggs, poultry and potatoes, but those deficits are getting smaller, especially in the wake of the intifada and the strong drive to attain self-sufficiency. Dependency on external sources is most clear in the case of wheat, sugar, and rice, where the percentages of supplies of the three items procured from external sources amount to 70 per cent, 100 per cent, and 100 per cent respectively.

Israel is the source of all OPT imported vegetables, fruits, meat, eggs, and dairy products. Some other products are of foreign origin, but imported via Israeli firms. These include primarily sugar, wheat and rice. Imports from Jordan are restricted to small quantities of legumes. An unexpected form of dependency on Israel for food has been that related to fruit and vegetables. Palestinians in the occupied territory have procured from Israel around 90,000 to 100,000 tons of fruit and vegetables per year (see table 2-4).

A part of these imports constitutes products not grown in the West Bank or Gaza, e.g. persimmons and avocados. However, the bulk consists of products grown locally but offered by Israeli suppliers at cheaper prices. A commodity breakdown of imports in 1985/86, for instance, indicates that 39 per cent of all these imports consisted of tomatoes and vegetables, of which the occupied territory suffered from large surpluses (see table 2-5).

Importing large quantities of farm produce from Israel indicates clearly that OPT growers still have wide scope for expanding local production. However, an effective process of import substitution can only be feasible when Palestinian farmers are able to benefit from improved terms of trade with Israel, diversify their cropping patterns, and improve further their production efficiency.

The objective of reducing food dependency on external sources has assumed considerable significance since the outbreak of the intifada in December 1987. This objective is not only underlaid by economic prerogatives, but also by the strong urge for reducing vulnerability to sanctions, should Israel decide to use food as a bargaining chip in its relations with the Palestinians.

F. Qualitative deficiencies

The present levels of food intake in the occupied Palestinian territory do not seem to pose problems of under-nutrition (i.e. insufficient food intake), but there are some signs of malnutrition (i.e. qualitative deficiencies). Available data point to a relatively low overall consumption of animal proteins. Regarding regional differences in food intake, the per capita consumption of animal protein may have reached pathological levels in certain communities, such as refugee camps and remote rural areas. Such deficiencies have been aggravated as a consequence of the prolonged and successive curfews imposed during the intifada in the context of punitive policies enforced by the Israeli authorities.

G. Consumption patterns of major farm products

The interaction between patterns of consumption and production can be better understood by conducting a separate analysis for each commodity. The following is a brief review of the demand and supply trends for major farm products as they have evolved during the past two decades.

1. Wheat flour

The annual consumption of wheat flour is estimated at 100,000 tons in the West Bank and 65,000 tons in the Gaza Strip (1987). Per capita consumption amounted to 123 kilograms in the former and 130 kilograms in the latter. 10/ These levels are higher than those of Israel, estimated at 93.3 kilograms. 11/ Again, this is an indication of the noticeably superior qualitative mix of the food basket in Israel.

The annual output of wheat varies widely from one season to another, but with an average of 30,000 tons in the West Bank and 4,000 tons in the Gaza Strip, it is then clear that the occupied territory produces around 21 per cent of its total consumption needs. Much of the wheat produced locally is sold in Israel, since guaranteed prices there are sometimes higher than those in domestic markets. Consequently, the OPT derives from Israeli mills probably more than 90 per cent of the flour they demand for local consumption. This is one of the primary and most serious forms of dependency on Israel for basic needs.

2. Oils

Olive oil is the major kind of oil consumed in the West Bank, and to a lesser extent in the Gaza Strip. But there are other oils in common use, mainly corn oil. Total consumption of all kinds of oil is estimated at about 16,000 tons, of which 10,000 tons are olive oil. Total output of olive oil, varies widely from season to season, averaging about 17,000 tons per annum.

The demand for corn and seed oils is underlain mainly by price differentials, as they are cheaper than locally produced olive oil. However, there is a growing preference for corn oil in local communities, even in many rural areas. An increasing number of consumers feel that corn oil is probably superior to olive oil for certain purposes, especially for frying of meat and vegetables.

The demand for local olive oil is also influenced by competition with olive oil imported from other Mediterranean countries, such as Spain, Greece and Turkey. It is important to note that in some years it has been possible to supply local markets with large quantities of imported oil at prices lower than those of local produce. This is a clear indication of the inferior competitiveness of local producers.

3. Vegetables

Total domestic consumption of vegetables (including melons) is estimated at about 225,000 tons. 12/ According to available data, OPT markets procure from Israel around 50,000 to 60,000 tons of vegetables annually (in 1987 it was 53,800 tons - see table 2-4). About half of this quantity comprises melons (watermelon and cantaloup). Conversely local production of vegetables during the 1987/88 season was estimated at 367,700 tons, i.e. 63 per cent more than domestic demand.

Importing vegetables from Israel, when local produce was available in abundant quantities and during the same period, can be attributed to the occasional dumping of those products at lower prices. This was facilitated by the price stabilization and subsidy schemes accorded to Israeli suppliers. In addition to price differentials, Israeli products do sometimes enjoy a qualitative advantage of some sort.

4. Citrus

Citrus is probably the most popular kind of fruit in the occupied Palestinian territory. Total domestic consumption in both areas is estimated at about 58,000 tons. 13/ About 1,000 to 2,000 tons of citrus are channelled from Israel to OPT markets annually. This quantity includes early and late season fruits and some quantities of low-quality produce offered occasionally at dumping prices. No local citrus-based processing industries exist inside the occupied territory at present, but substantial quantities of Gaza citrus (40,000 to 50,000 tons) are channelled to Israeli juice factories each harvest season. Local output of citrus during the late 1980s was estimated at over 220,000 tons, i.e. almost four times higher than domestic demand. This has made of citrus the major surplus branch, especially in the Gaza Strip.

5. Grapes

Grapes are a popular fruit consumed fresh in relatively large quantities. Local consumption varies considerably from one season to another, more in response to marketing circumstances than to changes in consumer tastes. The quantity of grapes consumed is estimated at about 28,000 tons. Imports from Israel amount to 1,000 to 2,000 tons, mostly of early- or late-maturing varieties. A small part of the produce, around 6,000 tons, is processed into such products as raisins, syrup, fresh juice, and wine. 14/ Local production of grapes is estimated at about 55,000 tons, i.e. about twice that of domestic consumption. Because of their marked perishability and currently limited processing potential, grapes are among the major surplus crops in the OPT.

6. Almonds

Unlike olives, almonds are not a staple food item, but they are widely consumed in several forms. Part of the crop is picked green, two to three weeks after flowers set. At this stage, almonds are consumed as a seasonal delicacy. Most of the crop, however, is left to dry out and is later offered for sale in the dry form. Almond seeds can be consumed fresh, but the bulk of it is used in making sweets and confectionary. More recently, there has been a growing trend towards using almonds to replace pine seeds in cooking. Bitter almonds constitute around 10 per cent of total output. These are not edible, but demanded by the (Israeli) pharmaceutical industry, at lower prices than the sweet edible varieties.

7. Meat

Total consumption of meat is estimated at 45,000 tons, more than half of it poultry (see table 2-6). Mutton is regarded locally as the prime type of red meat, and that is why more of it is produced and consumed than beef. On a per capita basis, the average consumption of red meats in the West Bank and the Gaza Strip is noticeably lower than in Israel (see table 2-6). It is also noted that consumption levels in the West Bank are still higher than those in the Gaza Strip, although the gap between the two is getting smaller.

Poultry meat is the predominant meat in terms of consumption, as it accounts for 56 to 60 per cent of total meat consumption in the OPT (68 per cent in Israel). The reason for the apparent popularity of this kind of meat is that it is markedly cheaper (the retail price for dressed poultry meat is about 38 per cent of the price of beef and 33 per cent that of mutton). Chicken accounts for about 80 per cent of all poultry meat, and the rest is comprised of turkey. Around 70 to 80 per cent of poultry consumption is procured from local farms; the rest is obtained from Israel. All turkey meat is purchased from Israeli sources, since no turkeys are raised in the occupied territory.

8. Fish

Fish is viewed as a delicacy by the residents of the OPT. Per capita fish consumption is estimated at 1.8 kg in the West Bank and 3.2 kg in the Gaza Strip (see table 2-6). This amounts to only 8 per cent of poultry consumption in the West Bank and 23 per cent in the Gaza Strip. Table 2-6 shows that per capita fish consumption in Israel is considerably higher than in the West Bank and Gaza Strip. The low level of fish consumption in the OPT is easily attributable to the fact that market prices are far too high in comparison to more popular kinds of meat (about twice that of dressed poultry). This means that the demand for fish is likely to expand to much higher levels if prices are reduced.

The bulk of fish consumed in domestic markets is imported from north European countries, because local production is much lower than is needed to meet consumption needs, even at the present low levels. The total quantity of fish caught in the Gaza Strip in 1989 (229 tons) amounted to 13 per cent of total consumption in the Strip, and to only 7 per cent of the aggregate demand for fish in both territories.

9. Eggs

Total consumption of eggs in the OPT in 1987 was estimated at 8,000 tons. On a per capita basis, consumption amounted to 88 eggs in the West Bank and 136 eggs in the Gaza Strip (see table 2-7). Consumption levels in the OPT have shown marked improvement during 1972-1987, yet they are still much lower than in Israel.

Local production of eggs until the mid-1980s lagged far behind domestic consumption. In 1985 the West Bank produced only 53 per cent of the quantity of eggs consumed, whereas the ratio in the Gaza Strip was estimated at 81 per cent. The level of self-sufficiency has risen tangibly during the past few years, especially after the intifada. In 1987 the West Bank produced 66 per cent of all eggs consumed, and the Gaza Strip 95 per cent of its total egg consumption needs.

10. Dairy products

There are two major types of dairy products common in the occupied Palestinian territories, those based on sheep and goat milk and those made of cow milk. Total consumption of milk in all forms is estimated at about 98,000 tons, which is equivalent to about 12 per cent of consumption in Israel. About 56 per cent of all milk consumption in the OPT originates from cow milk and the rest from sheep and goat milk.

The data in table 2-8 point to a low consumption level of dairy products in the OPT, especially in the Gaza Strip, where overall per capita consumption is estimated at 48 kg, i.e. only 27 per cent of the level in Israel. This is another indication of the qualitative deficiencies in the prevailing nutritional status in some parts of OPT.

One of the striking features of dairy consumption patterns is the noticeably low level of liquid milk intake. Nearly all local output of sheep and goat milk and much of cow milk is consumed in processed forms, mainly as white cheese and yoghurt. Liquid milk is noticeably expensive, thereby restricting its consumption largely to patients and children.

Consumption patterns of dairy products have undergone drastic changes in the aftermath of the intifada. Because of the strict boycott of dairy products imported from Israel, the consumption of liquid milk and cheddar cheese has dropped to much lower levels. Conversely, there has been a substantial increase in local production of cheese, yoghurt, labaneh, and liquid milk (offered mostly as fresh and unpasteurized).

Chapter III

STRUCTURE AND PATTERN OF OUTPUT

A. Sectoral composition of output

The sectoral composition of agriculture in the occupied Palestinian territory is clearly reflected by the relative weight of various farming patterns in the total value of agricultural output. Table 3-1 illustrates the secular trends in this connection, as based on the average output for two consecutive seasons during selected intervals.

Table 3-1 shows that there have been some fundamental transformations in the composition of agricultural output during the occupation period. The magnitude and causes of these changes will be evaluated under separate headings. It is important to note at this point, however, that the shifts in cropping patterns were confined mostly within the same types of farming, since they rarely involved the introduction of new crops or livestock. The composition of output, as it had evolved by the late 1980s, indicates that fruit trees comprised 28 per cent and 27 per cent of the value of agricultural output of the West Bank and the Gaza Strip, respectively. Vegetables accounted for 18 per cent and 40 per cent, respectively, whereas field crops amounted to 4 per cent and 2 per cent. The aggregate share of the livestock branches amounted to 49 per cent and 30 per cent of total output, respectively.

B. Trend of changes in cultivated area

Comparing changes in cultivated area and agricultural output prior to and during the occupation period provides insight into the evolution and potential prospects of the agricultural sector in the OPT. Such comparisons, however, are complicated by the use of different criteria and tools for collecting and interpreting statistical data during both periods. In particular, it is difficult to eliminate or ascertain with adequate precision the impact of intercropping on the areas reported for rainfed trees. A prominent example is the possible presence of a pronounced margin of double-counting in regard to olive orchards interplanted with almonds, which is quite common in northern West Bank districts. A similar complication relates to the degree of double-counting accruing to intercropping and double cropping during the same season, which is becoming a common practice in intensive patterns of farming.

The above-mentioned reservations are of particular significance when comparing acreage and production data before and during Israeli occupation. But comparisons are more reliable when restricted to periods during the occupation period.

Ascertaining changes in the area of land under cultivation is complicated by problems of definition pertaining to some patterns and forms of land use. There are at least four types of land use which pose special methodological problems when ascertaining the aggregate area of land under cultivation. In the following cases it is not always possible to draw the line between cultivated and uncultivated land.

1. There are relatively vast stretches of land on the eastern slopes of the West Bank which are usually sown with cereal grains early in the season, but a crop is harvested only if rainfall turns out to be adequate. If not, the fields are used as pastures for sheep and goats.

2. There are extensive areas of the West Bank which are characterized by excessive rockiness or slope, yet they are still used for growing trees (mainly olives and almonds), usually not on a commercial scale.

3. Land used as natural grazing pasture poses a different sort of problem. While most such land is of low quality and unfit for commercial patterns of production, it does support a major branch of livestock, namely, Bedouin-type sheep and goat raising.

4. Relatively large areas of land are left out of cultivation each year for reasons relating to crop rotation (described as fallow land). The area of land left fallow each year is estimated at about 300,000 dunums (18 per cent of that actually cultivated). This land is not usually included in the estimates for cultivated land. Yet, a precise definition of fallow land is not always provided.

Changes in the area of land under cultivation are depicted in Table 3-2. Based on available data, and in the light of all previous qualifications, it is possible to point to some important observations in relation to agricultural land use, as follows:

Total area under cultivation in the West Bank dropped by an average of 14 per cent in comparison to the pre-occupation level (average for 1963-1966). This has been attributed largely to the closing of extensive areas of land during the early years of occupation for security reasons. This applies to a narrow stretch of land bordering the Jordan River, and extending along its entire course through the West Bank (around 40 kilometres). It also includes vast areas in the hills overlooking the Jordan Valley and Dead Sea.

Cultivated area in the West Bank dropped further during the late 1970s. The average area for 1978-80 was 7 per cent lower than the average for 1968-1970 (20 per cent lower than the pre-occupation average). The reduction during that period was not caused by forced measures, as it was underlain mainly by marked changes in the economics of agriculture in rainfed areas, which account for 95 per cent of total cultivated area. Many peasants have opted to curtail or terminate their farming operations on land of marginal quality, either because profitability was drastically reduced or because the opportunity cost of labour had soared to such high levels that many farmers and hired workers had to desert farming.

An increasing area of cultivated land is being removed from farming as a result of the gradual implementation of extensive settlement-related road schemes. One striking example is Road Plan no. 50, which was approved in 1984 and implemented in stages since then. When completed, the plan will use up a total area of 101 square kilometres (101,000 dunums), of which around 40,000 dunums are under cultivation, i.e. 2.5 per cent of the total cultivated area. 15/

The total cultivated area in the Gaza Strip was undergoing a steady rise several years before the onset of Israeli occupation (by 32 per cent during 1963-1966). This trend was triggered and has been sustained by the very high population density and low indigenous employment creation potential. Additional motives for expanding cultivation emerged during the occupation period. Expenditure in agriculture increased, trading opportunities expanded, and technological change proceeded at a much faster pace. In practice, however, expansion in the area under cultivation was relatively limited, amounting to a total of 10 per cent during 1966-1989.

The apparent freeze in the Gaza Strip's cultivated area during the occupation period is the outcome of numerous adverse transformations. One basic factor is the growing shortage in water resources, as the quantity of water consumed in the Strip is already far greater than the amount of renewable reserve. Another constraint relates to the closure of wide areas of land declared as government property. The area of this category is estimated at 11 per cent of total land area in the Strip. 16/ In 1985, the Israeli Government claimed possession of 100,000 dunums, of which 20,000 were leased to the Jewish Agency and 7,000 were leased to Hof Gaza regional settlement council. 17/

Land expropriation measures in the Gaza Strip, whether for security or settlement purposes, escalated sharply during the late 1980s. According to an UNRWA investigation completed in late 1991, around 49 per cent of the area of the Gaza Strip was under Israeli control. 18/ Continuous encroachment on agricultural land for construction purposes constitutes another important restriction on the cultivated area. This factor may assume greater significance in the future once refugees are relocated outside their present camps.

C. Irrigated farming

Irrigated farming patterns occupy a significant position in OPT agriculture. This is clearly evidenced by their high share of the value of agricultural output, especially in the Gaza Strip (60 per cent as compared to 25 per cent in the West Bank). The contribution of irrigated farming patterns to exports is also markedly high, estimated for 1981-1986 at an annual average of 27 per cent of OPT total exports across the bridges. 19/

The total area of land under irrigation has witnessed an overall modest growth during the occupation period. Based on 1966 figures, the total irrigated area rose in 1990 by 17 per cent (see table 3-3). In the light of the rigid restrictions on the quantity of water available to OPT farmers, the growth in area was only possible following pronounced improvements in irrigation techniques.

It is important to note that irrigated area in the West Bank had undergone a noticeable drop during 1985 to 1990 (by around 9 per cent). In addition to factors relating to higher irrigation efficiency and scarcity of water in certain regions, the apparent drop in irrigated area also seems to be influenced by the deteriorating profitability situation of several major farming patterns.

The overall ratio of land under irrigation to total cultivated area is noticeably low (10.3 per cent for the OPT). However, this ratio is far higher in the Gaza Strip than in the West Bank (58.5 per cent versus 5.3 per cent). The corresponding ratio for Israel is 49.4 per cent, 20/ and for Jordan 16.4 per cent. 21/

The total volume of irrigation water used in agriculture is around 149 million cubic metres (see table 3-4). Consumption of irrigation water in the West Bank has stayed during the past 10 years at about the same level, whereas it dropped by about one-fourth in the Gaza Strip. This came about in part as a consequence of improved irrigation technology and the reduced area of citrus orchards. Furthermore, the lower volume of irrigation water used is directly related to the rigid restrictions imposed by the Israeli authorities on the drilling of new wells and on the rates of permissible discharge from existing wells. The quantity of irrigation water used in OPT amounts to 12 per cent and 28 per cent of that in Israel and Jordan, respectively (see table 3-4).

Irrigation technology has developed at a pronounced rate during the past two decades. The new techniques involve using drip pipes and sprinklers instead of earth furrows and basins. Table 3-5 shows that 62 per cent of all irrigated land in the Gaza Strip is served by modern techniques, as opposed to 46 per cent in the West Bank. The application of those techniques on vegetable farms is much more common than in tree orchards (at the OPT level: 69 per cent versus 39 per cent). Most farmers believe that trees develop their root systems so extensively that they cannot be irrigated properly by drip systems.

D. Sectoral changes in acreage and output

OPT agriculture has undergone profound changes in regard to its cropping patterns. These changes have come to bear on acreage, volume of output, productivity and the profitability situation of various farming patterns. The following is a concise exposition of the dynamics of change in all major farming patterns.

1. Field crops

The field crops branch was probably the most affected sector in terms of changes in area in the wake of Israeli occupation. By 1978 the area under field crops dropped by 33 per cent in the West Bank and 68 per cent in the Gaza Strip (see table 3-6). This decline is attributed to the gradual shift towards relatively higher value crops, and also to the desertion of land of marginal productivity. Much of such land has been turned into olive orchards which, unlike field crops, entail minimal cash expenses. In addition to these factors, the area of field crop plantations was greatly constrained by the massive wave of land confiscation and closures which swept through the occupied territory during the first decade after the imposition of Israeli rule. The reduction in the field crops area was accompanied by a considerable drop in total production, though not at the same rate, since productivity underwent a significant improvement.

A study of the composition of the field crop branch indicates that wheat and barley comprise the bulk of the area (for 1989: 68 per cent in the West Bank and 92 per cent in the Gaza Strip). Although grown typically as truck crops, wheat and barley cultivation has evolved in some parts of the West Bank and the Gaza Strip into a leading commercial type of farming, as in the rainfed plains of Jenin district where it competes favourably with melons. This provides an important option for alleviating surpluses of problematic farm products.

Another important transformation in this sector was the successful introduction of new high value crops during the 1970s. Among the most noted examples were seed onions and medicinal crops. Many farmers entered into contractual arrangements with Agrexco (the Israeli franchise exporter of non-citrus farm produce), which in the meantime provided the technical expertise and some of the production inputs. However, Agrexco seems to have decided to terminate its subcontractual arrangements with OPT farmers in regard to high-value crops, possibly giving priority to Israeli growers. Owing to the lack of local supportive and credit institutions which would be able to substitute for Agrexco, local farmers have been forced to cease their production.

Tobacco was for many years one of the main farming operations in certain parts of the West Bank. However, this branch has witnessed a steady decline since the late 1970s, when local cigarette firms reduced their purchases from local sources to less than 10 per cent of their needs, supposedly on account of inferior quality and relatively high cost. There is no inherent reason why local tobacco production cannot be made more competitive in the future.

2. Vegetables

Vegetable production in the West Bank was a rapidly developing branch for many years prior to Israeli occupation. Growth in this sector was facilitated by a number of favourable factors, most importantly enjoying access to extensive markets, both in Jordan and neighbouring countries. By virtue of having access to active extension and credit services, growers were able to raise productivity and expand production at high rates. Export-oriented vegetables were produced mainly under irrigation, mostly in the Jordan Valley, where warm temperatures in winter permitted off-season production. Larger areas were under cultivation on hilly slopes under rainfed conditions during the summer months.

Vegetable production has undergone major transformations in the wake of Israeli occupation, both in regard to production technology and trading opportunities. Most importantly, this branch has become increasingly market-oriented, in the direction of both local and foreign markets. As a consequence of greater competition, and in view of sharply rising labour costs, vegetable production in rainfed areas has suffered rapid decline. The total area under vegetables decreased by 57 per cent during 1968-1970 in comparison with the average for 1963-1966 (see table 3-7).

Vegetable area continued to decline, at a slow pace, until the late 1970s. Since then it has started to grow rapidly, so that by the mid-1980s it was 59 per cent higher than in 1968-1970 (see table 3-2). However, while rainfed land was being rapidly withdrawn from vegetables, the area under irrigation expanded at an appreciable rate. Irrigated vegetables in the West Bank soared from 28,000 dunums in 1966 to 66,000 dunums in 1987. 22/

Further expansion in the West Bank's vegetable area was later obstructed by new Israeli regulations which placed a rigid ceiling on the area of tomato and eggplants grown by Palestinian farmers in the Jordan Valley (Military Order no. 1039). Furthermore, the vegetable branch became subject to increasing constraints in export markets. The area of irrigated vegetables fell by 3,400 dunums in 1989, as compared with 1987, and it fell even more rapidly during 1990 (see table 3-7).

As in the West Bank, the area of vegetables in the Gaza Strip increased rapidly during the pre-occupation years. In 1966, the area of vegetables in the Strip was estimated at 20,000 dunums, nearly all of it under irrigation. Expansion in area so cultivated continued at a rapid pace until the late 1980s. Many of the new vegetable farms were established on land formerly under citrus. This substitution process was actively encouraged by the Israeli authorities, in an effort to save on water consumed in agriculture. By the mid-1980s the area under vegetables was twice the level of 1966 (table 3-8).

The rapid growth in the vegetable branch was clearly reflected in this sector's share in the value of agricultural output. The share of this sector in the value of the West Bank's agricultural output averaged 21 per cent during 1986-1988, as against 15 per cent in 1977-1979. The rise in the Gaza Strip was greater, from 11 per cent to 65 per cent (see table 3-8).

With greater intensification of vegetable farming, there was a growing trend towards specialization; hence the variety of vegetable crops grown on a commercial scale has become increasingly narrower. Table 3-8 shows that tomato, cucumber and watermelon accounted for 47 per cent of the total vegetable area in the West Bank and 57 per cent of the value of output from this branch. In the Gaza Strip, on the other hand, cucumber, potato and tomato were the major vegetable crops (44 per cent of area and 62 per cent of output value). This trend coincided with the relaxed marketing potential for surplus vegetables during the 1970s and early 1980s. Farmers are now considering the introduction of new vegetable crops, possibly to replace some grown at present.

One of the major vegetable crops undergoing fundamental changes in area, output and productivity was watermelon (and to a lesser extent cantaloup). The watermelon area decreased sharply during the early years of occupation (by 63 per cent during 1966-1970). It continued to shrink at faster rates in later years, down to only 3,000 dunums in 1975 (4 per cent of the 1966 area). This was basically due to the retarded level of melon production technology in common use until then, which rendered Palestinian growers less competitive in export markets. When farmers later acquired more efficient production techniques, the area under melons started to increase again. In 1985, it rose to 38,000 dunums, and production rose to 91,000 tons. It was possible to raise output by three times over its 1966 level, while increasing area by a little more than half.

Vegetable production under intensive conditions had, by the end of the 1980s, reached a point where major questions arose in regard to its scale and scope. Being export-oriented, this branch has become especially sensitive to policies and regulations promulgated by importing countries. Thus, vegetable production was hit hard during the mid-1980s, when Jordanian authorities started to impose increasing limitations on vegetable imports. More recently, it has been confronted by constraints imposed by the Israeli authorities. Direct exports to Europe, on the other hand, have not yet gone beyond pilot shipments owing to numerous difficulties. If the deadlock in the marketing of surplus vegetables is not resolved in a satisfactory way, vegetable farming in the occupied Palestinian territory may decline extremely rapidly.

3. Fruit trees

Fruit trees continue to occupy a leading, albeit rapidly changing, role in the agricultural sectors of both territories. This branch's share in the value of the West Bank farm production is characterized by violent fluctuations owing to the cyclical nature of the olive crop. In general, however, its contribution has undergone a pronounced downward trend in recent years. It declined from a peak of 43 per cent in the West Bank and 65 per cent in the Gaza Strip (in 1976) to 19 per cent and 22 per cent, respectively (in 1989). The decrease was compensated for by rises in the share of vegetables and livestock.

In terms of area, fruit trees occupied, in 1989, some 60 per cent of all cultivated land in the West Bank, and 59 per cent in the Gaza Strip. The area of fruit orchards has continued to increase steadily before and after Israeli occupation, especially in the West Bank. According to Jordanian data, it rose from 749,000 dunums in 1963 to 808,000 in 1966. At the beginning of the occupation period (in 1968) the area of orchards was estimated by Israeli sources, however, at 680,000 dunums. Obviously, the gap between the 1966 and 1968 estimates can only be explained in terms of methodological differences in estimation used in each case. When Israeli data is used as a benchmark, fruit tree area in the West Bank has recorded a rise of 53 per cent during 1969-1989 (from 685,300 dunums to 1,046,400 dunums (see table 3-9).

The area of fruit tree plantations in the Gaza Strip also expanded after 1967, though at lower rates than in the West Bank. In 1978, the area reached a peak of 129,000 dunums (46 per cent higher than the 1966 area). It has decreased slowly since then; by 1989 it was 22,000 dunums lower than in 1978. A sectoral analysis of fruit trees in terms of area and value of output reveals clearly that this sector is dominated by four kinds of fruit: citrus, olives, almonds and grapes. The following is a brief evaluation of the developments which have taken place in each branch.

(a) Olives

Olive culture has been for a long time the backbone of West Bank agriculture. This is manifested in the three major indicators of area, output and share in the value of agricultural production. Table 3-10 shows that olive orchards account on average for 75 per cent of total area of fruit trees and 27 per cent of total fruit output. The share of olives in the total value of agricultural output varies considerably from one year to another, in direct response to the highly cyclical nature of olive-bearing habits. Its average for 1987-1989 amounted to nearly 21 per cent.

Annual production of olives fluctuates widely: from over 100,000 tons in good years, to less than 20,000 tons in bad years. Despite seasonal variations, total olive output has increased considerably during the past 25 years, mainly due to expansion in area. Productivity of olive orchards, it should be noted, has scored only a modest improvement, and mostly in new olive orchards where growers are usually more highly motivated to tend their trees than in older orchards.

The relative significance of olive culture in the West Bank has undergone violent transformations during the occupation period. The economic viability of this branch has dropped to such marginal levels that it has become of secondary importance to the vast majority of farmers as a source of income, although it still remains of great importance at the national economy level. Despite minimal profitability, however, farmers are still strongly motivated to grow more olives. The area increased during 1978-1985 at the rate of 6,300 dunums per annum (see table 3-11), and it continued to expand during the late 1980s.

There are strong motives for the apparent thrust towards olive culture in the West Bank. In the first place, olives produce a staple oil which is commonly believed to be of superior quality to other substitute oils. Furthermore, olives are usually grown on land of marginal quality, most of which is not fit for more remunerative, alternative farming patterns. In addition to economic motives, landowners in the West Bank are anxious to demonstrate in visible form that their land is under active cultivation. This is viewed as an effective means for safeguarding land from possible confiscation, an imminent danger during the past 25 years. Israeli settlers and "green patrol" officers have raided olive orchards and uprooted old trees and newly planted seedlings. The total number of trees uprooted during 1988-1989 alone was over 78,000, about 90 per cent of them olive trees. 23/

Olive growers are constantly faced with the dilemma of how to sustain this type of farming despite its dwindling profitability. The problem is further compounded by the fact that olive culture has been one of the least innovative agricultural branches, with productivity remaining at low levels. In order to maintain the feasibility of olive growing, despite its decreasing profitability, farmers allocate to this branch only those forms of labour which have very low opportunity cost, such as elder family members, women, children, and the spare time of owners. Furthermore, the amount of purchased inputs put into olive production is very low, often restricted to the cost of ploughing.

The future of olive production in the West Bank is overshadowed by doubts relating to the market potential for olive oil and olive pickles. Local production of both products is considerably higher than domestic demand. Exports to neighbouring countries, mainly Jordan, are faced with the twin problems of smaller deficits in those countries, as they are rapidly increasing local production. Furthermore, Palestinian olive oil is becoming less competitive due to relatively high production costs. It is, therefore, imperative that the necessary measures be taken promptly in order to raise overall productivity, reduce production costs, and open new markets for Palestinian olive oil and olive pickles.

(b) Citrus

Citrus production is another traditional specialty in Palestinian agriculture. Interestingly, however, neither what came to be known as the West Bank nor the Gaza Strip were important citrus areas in Palestine during the British mandate period. The two territories initiated vigorous citrus branches only after they were severed from the citrus producing areas in the central Palestinian coastal plains. By 1966, the area of citrus orchards in the West Bank amounted to 13,148 dunums. 24/ In the Gaza Strip, citrus area in 1965 was reported at 55,892 dunums. 25/

Unlike olives, citrus farming has not occupied extensive land areas, especially in the West Bank, where the total area of citrus was estimated at 24,000 dunums (1990), i.e. only 3.5 per cent that of olive orchards. The area of citrus in the Gaza Strip, on the other hand, was relatively greater, amounting to 60,400 dunums during the same year. However, the significance of this branch in the West Bank economy goes far beyond its relative area. Although it occupied only 1.5 per cent of the West Bank's total cultivated area, citrus orchards accounted, during the three seasons of 1986-1988, to an average of 6 per cent of agricultural output value. In the Gaza Strip, citrus orchards accounted for 32 per cent of cultivated area and 21 per cent of agricultural output value (see table 3-12). The difference between the two regions reflects other structural differences in regard to the degree of intensification of cropping patterns in each region.

The OPT citrus sector, especially that of Gaza, has been undergoing steady decline during the past decade. This is reflected most clearly in this sector's sharply decreasing share in the value of agricultural output, which dropped from 52 per cent in 1969-1971 to 21 per cent in 1986-1988 (see table 3-12). The decrease in the West Bank was much smaller, but still an indication of a fundamental trend.

The relative decline of the citrus sector is also evidenced by the steady decrease in area. This is particularly true in the Gaza Strip where area fell from a peak of 71,700 dunums in 1980 to 58,200 dunums in 1991, i.e. by 19 per cent. 26/ The loss of interest in citrus also took another form, namely, providing a much lower level of husbandry than recommended. This is reflected specifically in lower than optimal rates of application of irrigation water, fertilizer and pesticides. 27/

The main reason for the reversal in the citrus sector was its steadily declining profitability, a trend which prevailed throughout the past decade. This in turn was the outcome of several factors: the markets for citrus products were severely curtailed, especially in the wake of the Iran-Iraqi war (see chapter on marketing of farm produce); the cost of purchased production inputs continued to rise at fast rates as a result of high inflation; and the adverse impact of such an imbalance on Israeli citrus producers was absorbed through government-sponsored price stabilization and subsidy schemes - Palestinian growers were totally denied such benefits.

There are other problems and constraints confronting citrus growers in the occupied territory. It is clear, for instance, that many orchards are getting too old (30 years or more), hence their productivity is lower and fruit quality is declining. This is especially true in some parts of the West Bank, such as Qalqilia, where the quality of produce has deteriorated to such levels that producers face serious problems in disposing of their output at remunerative prices. In the Jordan Valley, and in some parts of the Gaza Strip, rising salinity is becoming a serious problem up to the point that some orchards have been removed. Once citrus trees are uprooted, the re-planting of new seedlings, on the same land or elsewhere, requires a permit from the Israeli authorities. Such permits are normally denied, especially in the Gaza Strip.

In brief, it seems that the demise of the citrus branch in the occupied territory is not attributable only to marketing constraints, as often claimed by local growers and citrus trading firms. There is ample evidence to suggest that Palestinian citrus growers and marketing institutions are handicapped by numerous other deep-rooted problems. The main challenge before the Palestinians is how to produce a better quality product at a minimum cost, and how to perform the needed auxiliary handling services as efficiently as those of other competitors. In all cases, it is imperative to streamline production in the light of market demand for fresh consumption and industrial purposes.

The future of citrus farming in the territory is also unavoidably linked to the rapidly deteriorating water balance in the region. As the opportunity cost of water is rising rapidly to unprecedented levels, Palestinians have to reconsider the viability of those orchards where productivity is too low to leave a real margin of profit. In this sense, it is imperative to reconsider the economics of citrus farming in all orchards where yields are below three tons per dunum. This applies to around half of all orchards in the West Bank and the Gaza Strip.

(c) Grapes

Vineyards have flourished on West Bank mountains since ancient times. Grape production had already developed prior to 1967 into one of the major crops in the country, maybe next to olives in relative significance. By 1966, the area of vineyards amounted to 128,000 dunums, of which 92 per cent was located in the Hebron and Jerusalem districts. 28/

Grape farming had continued to develop during the early years of occupation, but along more intensive directions. Compared to its 1966 level, the area of vineyards in 1969 fell in both the West Bank and the Gaza Strip, i.e., by around 26 per cent in the West Bank and 2 per cent in the Gaza Strip (see table 3-13). The fall in area has continued throughout the occupation period. Similarly, there has been a significant decrease in this branch's share in the value of agricultural output. Total production, however, underwent a marked rise during 1968-1989, mainly as a result of higher productivity and increased intensification. Improvements in productivity were possible as a result of wider dissemination of trellising, more efficient application of pesticides and fertilizers, and wider use of machinery and production equipment.

The relative decline of grape culture is due in part to the increasing shift to higher cash value crops, especially in the Gaza Strip. There have been other factors exerting a cumulative depressing effect on this branch, especially the following:

1. Around 80 per cent of all vineyards are of a white grape variety, called Dabouki. While well-adapted to the terrain, and of high productivity, the fruit of the Dabouki is too soft to withstand transportation to export markets, even to those in Jordan. By the time Dabouki grapes have reached their destination, their quality is far below competitive standards.

2. The major export markets for Palestinian grapes, namely, Jordan and Israel, are increasingly limited. Jordan is producing more grapes, and Israel has sharply cut back on grape imports since the outbreak of the intifada.

3. As in the case of some other farm products, the lack of adequate marketing facilities and viable food processing industries deprives growers of a major outlet for their surpluses. This is especially true of grapes, since the bulk of produce is more fit for processing purposes than for table consumption in distant markets. It is important to note, in contrast, that only 20 per cent of all vineyard area in Israel is devoted to the wine industry. 29/

(d) Other transformations in the fruit tree branch

Other important transformations have emerged over the past two and a half decades which deserve special attention when planning for the future of Palestinian agriculture. The following are some tree crops in which significant developments have taken place:

1. Almonds

Compared with other fruit trees, almonds occupy the second most important position in regard to area (78,000 dunums in the West Bank and 21,000 in Gaza Strip). However, the relative significance of this branch is far lower than that of its area. Almonds account for 10.4 per cent of total cultivated area in Gaza Strip and 4.7 per cent in the West Bank, yet their respective share in the value of farm output is only 1.2 per cent in the former and around 0.6 per cent in the latter. Almond orchards constitute an important capital investment which at present is being rapidly depreciated. High labour costs and low level of supportive services, especially in regard to pest control have led to almond orchards being excessively neglected; their productivity has deteriorated to very low levels.

Almond is one of the few trees which can thrive on the rocky slopes of the West Bank. Unlike olives and grapes, almonds possess a more promising marketing potential. Reviving this sector poses an important challenge for Palestinian agriculture.

2. Figs

Fig culture is another rapidly declining branch. The area of figs in the West Bank fell from 66,000 dunums in 1966 to 23,000 in 1986. As in the case of olives and almonds, the main reasons for the collapse of figs lie in the high cost of labour, and the very low level of technical and other supportive services. The epidemic infestation with the scaly fig insect has been one of the major reasons for the rapid decline of fig productivity and the deterioration of fruit quality. Technical experts emphasize that this insect is easy to control if collectively sprayed.

Figs are characterized by a potentially large profit margin which may prove much higher than that of olives and almonds. Furthermore, they possess a relatively large industrial potential. The future of this branch is heavily contingent on the success of growers in reducing labour costs and improving husbandry practices.

3. Bananas

Bananas are grown exclusively in the Jordan Valley where climatic conditions are favourable for superior quality produce. The banana area increased from 2,126 dunums in 1966 to 4,553 dunums in 1986, and then declined to 3,700 dunums in 1989. Until the outbreak of the intifada, nearly all produce was exported to Jordan, as local demand was met mainly by cheaper bananas imported from Israel.

Banana orchards are among the highest of all fruit trees in terms of profitability. However, extensive expansion in this branch is impeded by the lack of adequate water resources. This constraint is especially important in the light of the unusually high water consumption of banana plants (about three times that of citrus). This problem is further compounded by the sensitivity of bananas to salt concentration in irrigation water. Hence banana cultivation has to compete with other crops for the limited supply of low-saline water available in the Jordan Valley. Another impediment to further expansion relates to the limitations on exports across the bridges. Should both constraints be relaxed, this branch may assume much greater importance in West Bank agriculture.

4. Dates

Dates have rarely attracted attention when evaluating Palestinian agriculture. Their area in the West Bank amounts to only 570 dunums (all in the Jordan Valley) and to 2,000 dunums in Gaza Strip. Total output is far lower than needed to meet domestic demand.

The development of date culture and related industries may present an important opportunity for Palestinian agriculture. Further expansion is not constrained by a shortage of irrigation water. The main obstacle is the scarcity of certified seedlings, which at present are procured from Israeli sources. The reasons for restrictions on seedlings are underlain by protectionist motives, as Israeli planning institutions would like to maintain this branch as an Israeli speciality. As a result of restrictions on the dissemination of dates in Palestinian agriculture, interested buyers are obliged to obtain seedlings on the black market, usually in very small numbers, and at exorbitant prices ($50 or more per seedling).

E. Livestock branches

Certain livestock branches, and in particular poultry, had developed at a marked pace during the last few years before the onset of Israeli occupation. Growth has continued during the occupation period, but along new directions. Table 3-14 shows that the share of the livestock branches in the value of agricultural output decreased slightly in the West Bank during the late 1970s in comparison with the 1969-1971 period. However, the share of this sector rose sharply during the 1980s, especially after the intifada, reaching 49 per cent during the two seasons of 1989 and 1990. Similarly, the livestock sector's share in Gaza Strip rose to 30 per cent, as compared with 20 per cent during 1969-1971.

Rapid growth in the livestock sector, after the outbreak of the intifada, is attributed mainly to the boycott imposed on the import of Israeli dairy and poultry products. In 1989, the share of this sector in agricultural output value hit a record 54 per cent in the West Bank and 30 per cent in Gaza Strip (compared with 43 per cent in Israel (1989), and 43.4 per cent in Jordan (1987)).

Compared with other farming branches, the share of livestock in the total value of agricultural output is far greater. In 1989, it was greater in the West Bank than the combined share of fruit trees and field crops, and in Gaza Strip it was equal to about 46 per cent of that of vegetables.

The livestock sector consists of four major branches: sheep and goats, cattle, poultry, and fish. Table 3-14 shows the relative significance of each branch as indicated in its relative weight in the total value of livestock output. Output data show that sheep and goats are the dominant branch in the West Bank (60 per cent of livestock output value), whereas poultry is the dominant branch in Gaza Strip.

Developments in specific livestock branches will be evaluated separately, although all livestock branches suffer a number of common problems which impede a more stable pattern of growth. The following paragraphs summarize those problems.

The level of supportive services available to livestock raisers is noticeably deficient. This applies, for instance, to the emasculated performance of the agricultural extension department, the lack of diagnostic laboratories, the lack of feed analysis facilities and quality control regulations, and the very low level of processing and marketing facilities, especially in regard to dairy products.

All branches of livestock in the OPT are handicapped by the dilemma of having to compete with Israeli products which are offered in Palestinian markets at subsidized prices. Israeli Government policy in this regard has been guided by the twin objectives of providing producers with price stabilization schemes and supplying consumers with livestock products at price levels acceptable to the consumer lobby groups in Israel. Inadvertently, this policy has led to the indirect transfer of subsidy to consumers in the occupied territory. Conversely, livestock raisers in the OPT have been obliged to enter into inequitable competition with Israeli producers, as they are denied access to subsidies and price stabilization schemes, on the premise that they are not Israeli citizens.

Livestock branches are among those high-value types of farming which are regarded as integral components of the Israeli agricultural sector. As a major manifestation of this policy, each of them is overseen by a centralized institution which represents the interests of their members. One of the cornerstones of the policies adopted by those highly powerful institutions is to restrict the size of the OPT livestock branches, both in regard to scale of production and the variety of livestock raised. It is no coincidence, for instance, that farmers in the occupied territory have no access to high quality certified breeding stock, and that they raise no turkeys, although enormous quantities of this kind of meat are consumed in local markets, all of it procured from Israel. The following paragraphs provide further examples of such policies.

1. Sheep and goats

This branch has always been of primary significance in West Bank agriculture, but its role has passed through major changes during the occupation years. Prior to 1967, sheep-raising was almost restricted to nomadic Bedouin flocks. This was facilitated by the abundance of free grazing areas, especially on the eastern slopes of Hebron-Bethlehem districts. Furthermore, the low opportunity cost for unskilled labour provided greater viability to this type of farming. Goats in the West Bank are on average about 60-70 per cent of the sheep population, and are concentrated in areas with inferior quality grazing land. This ratio is reversed in Gaza Strip, because of the lower quality of free grazing pastures.

As an immediate consequence of occupation, the area of land open to free grazing was sharply reduced, as most such land was closed or confiscated by the occupation authorities. This led to a reduction in the West Bank's population of sheep and goats during the early years of the occupation period. By 1972, they had decreased by 36 per cent. The decline of this sector continued through the 1970s, though at more modest rates (see table 3-15).

No data is available on Gaza Strip during the first decade of occupation, but more recent data indicates that the population of sheep and goats has also fallen sharply during 1978-1987. It is likely that this trend prevailed during the earlier years of occupation.

A technological breakthrough in sheep raising took place in the early 1980s following the introduction of a new breed of hybrid sheep, known as Assaf, which is characterized by high performance under indoor methods of husbandry. Raising sheep of the Assaf breed swept through the West Bank during the mid-1980s, but with mixed results. It was soon learnt that this strain is far more demanding in terms of nutritional and hygienic requirements than could be afforded by most raisers in the OPT. Its productivity was therefore lower than expected, especially on those farms where raisers were deficient in technical expertise. Many Assaf raisers were disadvantaged, in comparison with those raising Baladi strains, by higher production costs, whereas the productivity of their flocks was much less than expected.

Sheep and goat raising gained vigorous momentum in the wake of the intifada, when a stiff embargo was imposed on the imports of Israeli dairy products. Consequently, this branch has become one of the primary employment sectors for the great many workers who lost their jobs during the past four years. The expansion was most clear in regard to the Assaf sheep strain, since it is much more responsive to the sudden rise in demand for meat and dairy products. The number of sheep and goats in the West Bank is reported to have risen by 21 per cent in 1989 over that of the previous year.

After rapid growth during 1985-1988, sheep raising underwent a severe crisis in 1989, relating mainly to sharply reduced profitability. This was due largely to soaring prices of grains and feed, which rose at much higher rates than those of mutton and dairy products. The reversal in profitability resulted in a wave of losses among local sheep raisers, and led in turn to a contraction in production. For reasons relating to their cost structure, the impact of these adverse changes was considerably less severe on Bedouin-type sheep and goat raising.

2. Cattle

The West Bank and Gaza Strip have never had a flourishing cattle-raising branch in the modern sense. This seems to have been the outcome of several factors, most importantly, the lack of cheap forage sources and the deep-rooted consumer preference for mutton and dairy products derived from sheep and goats. However, a relatively large number of domestic (Baladi) cows had been raised prior to occupation, fed mostly by scavenging on crop refuse. Their productivity was noticeably low, estimated at about 1,000 kg of milk per year. The number of Baladi cows in the West Bank declined steadily soon after the onset of occupation. By 1972 their number had fallen to 78 per cent of the 1966 figure; in 1987, they dropped further to 10 per cent (see table 3-16). A similar trend has apparently prevailed in Gaza Strip, although no data are available for the period prior to 1978.

Unlike Baladi herds, the number of cows from improved strains did not witness violent fluctuations. Again, this was due to the Israeli Government's pricing policies. Milk and other dairy products were so heavily subsidized that OPT raisers being denied of any such subsidies stood practically no chance of competing with Israeli producers.

For reasons similar to those relating to sheep and goats, cattle raising in the West Bank gained a new impetus after the intifada. The number of cattle during 1987-1989 rose by 28 per cent in the West Bank, and by 66 per cent in Gaza Strip (see table 3-16). Unlike sheep, no serious profitability problems have yet afflicted this branch.

The outlook for the cattle-raising branch in the OPT is mixed. On the one hand, there is still ample opportunity for expanding local production of milk, since per capita consumption of liquid milk is very low, especially compared with Israel. On the other hand, any large-scale expansion in this branch will have to take into consideration the eventual impact of having to compete with Israeli dairy producers, who still enjoy effective subsidies (though lower than before) and who operate at much higher productivity levels. This generates deep concern regarding the future of cattle farms and dairy operations in the OPT, once local markets are ultimately re-opened to competing products.

3. Poultry

Poultry farming in the West Bank was one of the fastest growing branches of agriculture in the pre-occupation period. The poultry industry became a highly intensive and commercialized branch which was closely related to the dynamic developments in that field. In 1966, there were 160 farms in the West Bank raising about 3 million broilers per year and 32,000 layers of hybrid strains, in addition to more than half a million layers of indigenous strains. 30/ The industry was served by five hatcheries and two feedmills, all located in the East Bank. Credit facilities for expanding and modernizing poultry farms were available at concessional terms through government credit institutions and by suppliers of feed and baby chicks.

The OPT poultry industry was subject to violent transformations in the aftermath of Israeli occupation. Growth proceeded at a marked pace due to unconditional access to Israeli sources of inputs and technology. Conversely, because of free entry of Israeli poultry products into OPT markets, local producers were exposed to great risks and violent fluctuations in profitability and output levels.

Rapid growth in the OPT poultry industry was visible in both absolute and relative terms. The share of poultry in the value of the West Bank's agricultural output rose from 9 per cent in 1970 to 16.5 per cent in 1987; in Gaza Strip it rose from 4 per cent in 1978 to 13.4 per cent in 1989 (see table 3-17). In quantitative terms, the size of West Bank layer flocks increased from 120,000 in 1972 to 177,000 in 1986. In Gaza Strip layer flock size rose from 28,000 in 1978 to 100,000 in 1986.

The data in table 3-17 indicate that there has been a pronounced and steady growth in the OPT poultry industry. The growth rate has accelerated since the outbreak of the intifada, especially in regard to eggs. Despite its apparent growth, the OPT poultry industry is handicapped by violent fluctuations in profitability which tend to induce an erratic pattern of production. Many experts blame this phenomenon on the policies adopted by the Israeli Poultry Marketing Board, which they say sometimes resorts to manipulating market prices in ways intended to undermine the interests of Palestinian raisers.

In addition to indirect measures, the Israeli authorities resort to more direct means for the purpose of restricting the size of the OPT poultry industry. This is expressed most dramatically by the persistent refusal to license the establishment of a poultry hatchery in the territory, so that the OPT raisers are forced to rely exclusively on Israeli chick suppliers. This policy had escalated further in 1987 when poultry raisers were required to obtain licences from the Israeli authorities, and a quota on the number of baby chicks sold by Israeli hatcheries was imposed on raisers in the occupied territory. Since the promulgation of those regulations, all purchases of chicks are conditional on procuring permits from Israeli officials in the Department of Agriculture.

4. Fishing

Being endowed with a coastline of 43 kilometres, fishing has been for a long time an important economic sector in the Gaza Strip. During the better days of this industry, up until the late 1970s, the fishing branch employed around 1,000 workers. 31/ The total quantity of fish caught in 1979 was estimated at 3,500 tons, and the share of this branch in the value of agricultural output in the Strip amounted to 6 per cent. 32/ The boom in the fishing industry was facilitated by free access of fishermen to all sea areas lying opposite the coast of the Strip and Sinai Peninsula.

The status of the fishing industry changed abruptly after the signing of the Egyptian-Israeli peace treaty in 1978, which reduced the fishing area from 7,500 square kilometres to 600 only. 33/ The fishing industry has suffered further by the tougher Israeli security measures implemented in recent years. Such measures include the following:

- Imposing a limit of 12 miles on the area accessible to Gaza fishermen.
- Fishermen are permitted to conduct their work only at night; they are required to debark on shore by 5 a.m.
- Israeli fishermen are permitted free entry to the Gaza Sea water, and they are not subject to the same restrictions as those imposed on Palestinians.

The above-mentioned adverse changes in the fishing industry have led to steady and substantial decline in its size and relative significance. The quantity of fish caught in 1989 amounted to only 229 tons, for a share of only 0.7 per cent of agricultural output value. 34/

Another striking feature of OPT agriculture is the total absence of freshwater fish farms, despite the enormous expansion of this branch in Israel. This is attributed in part to scarcity of capital, especially given that this type of farming is capital-intensive. However, there is also the factor that obtaining the necessary technology required is particularly difficult and expensive.

Chapter IV

LAND, EMPLOYMENT AND PRODUCTIVITY

A. Structure of land ownership

Land ownership in the West Bank and Gaza Strip, as is the case in most countries of the Middle East, is beset by two major problems: skewed land distribution and excessive fragmentation. Based on the 1967 census, the average size of a holding was about 38 dunums in the West Bank, and 30 dunums in Gaza Strip. 35/ These figures, however, say nothing about two fundamental aspects of land ownership, namely, differences in land quality and extreme variations in size of holding. More detailed studies of land ownership patterns are needed for planning purposes.

Feudal patterns of land ownership had afflicted Palestine on a scale little different from other countries in the region which were under Ottoman rule. By the turn of the century, six families in Palestine owned 23 per cent of all cultivated land, while 16,910 families owned only 6 per cent. 36/

Upon cessation of Ottoman rule, and in the light of revived awareness as to the political and economic implications of land ownership, the amassing of excessively large holdings became much more difficult. A new trend set in whereby feudal holdings were fragmented into ever smaller parcels. As common in Islamic countries, this process was underlain by the practice of division of holdings among heirs. Consequently, the number of large holdings in the West Bank (those over 1,000 dunums) dropped sharply from 215 in 1953 to 30 in 1965 (see table 4-1). Their number has continued to decline since then, though at a slower pace. Fifty per cent of all holdings in 1965 were less than 10 dunums in size.

The splitting of large holdings into smaller ones proceeded at a vigorous pace during the 1950s and 1960s. Yet, available evidence still points to a pronounced concentration of large land areas in the hands of a few owners. Table 4-2 shows that while 30 per cent of all owners in the West Bank accounted for 10 per cent of owned land, 12 per cent of owners possessed 66 per cent of the total area in the form of holdings of 50 dunums or more.

The trend towards fragmenting holdings into ever smaller sizes seems to have reached extreme levels, as indicated by the sharp rise in the number of very small holdings. The percentage of holdings of less than 10 dunums increased from 27 per cent to 50 per cent during 1953-1965 (see table 4-1). The primary cause of this phenomenon lies in the verbatim promulgation of Islamic injunctions relative to distribution of inheritance among heirs. Another factor, though less important in relation to cultivated land, is the occasional parcelling of larger holdings for purposes of land speculation.

Land distribution patterns in Gaza Strip demonstrate more strikingly the diverse problems of feudal holdings and excessive fragmentation. Table 4-3 shows that 4.1 per cent of land holdings (those of 100 dunums and over) accounted for nearly 33 per cent of total cultivated land, whereas 46 per cent of all holdings (those of 1-10 dunums) accounted for only 9 per cent of total cultivated area.

The division of nearly all parcels in one holding among eligible heirs has led to extensive dispersion of fragments in the same holding. Although there is no statistical evidence about the intensity of this problem in the West Bank, data available for Jordan, where inheritance laws are identical, points to the same problem. For Jordan as a whole, the overall average number of fragments per holding was estimated in 1975 at 2.3. 37/

Excessive fragmentation of holdings and increasing dispersion of plots in the same holding have imposed serious constraints on the process of agricultural development, notably the following:

1. Holdings are often too small to provide sufficient income for the farm family. This weakens the incentive of heirs to develop their farms and paves the way for many of them to desert their land and take up other occupations.
2. The mechanization of farming operations is rendered increasingly difficult, both for technical and financial reasons.
3. The proliferation in the number of disinterested landowners creates additional problems of communication for support institutions, such as those dealing with extension services, credit and marketing.
4. The dispersion of plots in a holding over a wide area adds to the difficulty and cost of access, and reinforces the lack of interest among owners in attempting commercial patterns of farming on their land.

The foregoing discussion on the size of holdings sheds light on some important features of agriculture in the occupied territory. It is clear that there is a problem at both ends of the ownership spectrum, yet it is not possible to make concrete conclusions as to the ideal size of farm in the West Bank and Gaza Strip until detailed farm management studies have been conducted.

B. Patterns of tenure

Tenancy patterns in the West Bank were ascertained for the first time in the 1965 agricultural census, which revealed that more than two thirds of all holdings were owned by their operators, while just under 10 per cent were cultivated by tenants alone (see table 4-4).

According to the census of 1967, some 43 per cent of all West Bank households owned farms, as compared to only 14 per cent in Gaza Strip (table 4-5). The lower ratio in Gaza Strip is due to the preponderance of refugees, who are characterized by a very low equity in agricultural land.

C. The role of tenancy

There is no reliable evidence on the developments which may have taken place in patterns of land tenure following occupation. Empirical evidence does suggest, however, that the implications of tenancy are much more important than indicated by the above statistical data. Extension specialists and leading farmers estimate that 50 to 60 per cent of all commercial farms in the Tulkarm, Jenin, and Jericho districts are cultivated by tenants and not by owner operators.

There are several forms of tenancy prevailing in the occupied Palestinian territories. Among the most common are the following:

1. Cash rent is the most common in intensive patterns of vegetable farming in the Tulkarm and Jenin districts, as well as in Gaza Strip. The market rent in 1991 was around $50 per dunum per year. In this case, landlords play no role in providing any form of production inputs or other services. No serious problems are encountered in this kind of tenancy.

2. Tenancy in the Jordan Valley is conducted mainly on a share-cropping basis. In addition to providing land and water, landlords provide a share in all other production inputs and rented mechanical services. In most cases they also provide a credit service (in kind), and they undertake to dispose of output. Despite deep suspicion that growers may not be getting a fair deal from landlords, this form of tenancy has helped sustain and promote intensive farming in areas where farmers are too poor to finance investments from their own resources.

3. A unique form of tenancy is widespread in olive-producing areas, whereby owners delegate the picking of the crop to "tenants" against a given share of the yield of fruit, set currently at around one third of total yield. Tenant families in this case usually comprise a large number of non-market-oriented workers (old people, women, and children).

Despite the absence of laws governing tenancy, farmers in the occupied territory do not experience serious inefficiencies as a result of tenurial problems. Disputes between landowners and tenants are rare; in the vast majority of cases leases are renewed automatically. In fact, it is often argued that tenancy may have helped improve productivity in areas of intensive agriculture, as a consequence of handing over scarce land and water resources to professional farmers who have the expertise and the family labour force deemed imperative for competitive farming in the OPT setting.

D. Productivity and technological change

Productivity in agriculture had witnessed marked improvements prior to the onset of Israeli occupation. This was most clear in branches of irrigated agriculture and poultry. However, productivity has regained momentum during the past two decades. This is reflected most clearly in both land and labour productivities. Changes in these two types of productivity are reflected heavily in a third type, namely, output value per unit of area.

1. Changes in land yields

Projecting precise changes in agricultural productivity is complicated by violent cyclical fluctuations in output, which are characteristic of many types of farming. This is particularly true in the case of rainfed patterns of agriculture in the West Bank. Furthermore, productivity varies widely in the same type of farming, depending on the degree of intensification and level of technology. A rough idea of the quantitative magnitude of change in yield is presented in table 4-6.

The data presented in table 4-6 indicate that there has been a substantial increase in yields of all major crops, but the increase was most pronounced in the case of intensive patterns of irrigated farming, such as tomato and cucumber. Productivity of these crops, as well as other crops typical of modern intensive farming, has in fact risen at much higher rates in the case of protected farming (greenhouses and tunnels). Similarly, great improvements in productivity have been achieved in livestock branches, especially in sheep and poultry.

Productivity has also improved in the case of rainfed trees and crops, but often at rates much lower than those of intensive farming operations. This is particularly true in regard to olives, almonds and figs. The retarded growth in yields in those branches is attributed to the following:

(a) Their profitability decreased drastically owing to escalating production costs, especially of labour. This has severely undermined the motive for greater investment in new technology.

(b) Israeli research centres showed little interest in improving forms of technology which are pertinent to agriculture on hilly and marginal land. The impact of this constraint was compounded by the closure of local research institutions and the inadequate exposure to foreign sources of technology.

(c) Dissemination of new technology was impeded by excessive fragmentation and dispersion of holdings.

(d) Because of their fragile economic base, farmers in hilly areas often assume a more conservative attitude to change.

(e) Excessive rockiness and difficult accessibility are direct reasons for the weaker introduction of new technologies.

Rising agricultural productivity has been largely a function of expanded application of modern production inputs and greater efficiency in using them. The modernization process has covered all aspects of production, especially those related to quality of seeds and seedlings, pest control practices, methods of protection from weather hazards, and irrigation techniques. The process of change was necessitated by greater competition in local and export markets.

The transfer of technology into OPT agriculture was expedited by numerous vehicles. Service staff employed by Israeli firms, most of whom were Israeli Arabs, have played a significant role in this process. OPT labourers working in Israeli agriculture were also helpful. The extension staff in local offices of agriculture has played an important catalytic role, especially during the early years of occupation. It should be noted, however, that the efficacy of the Department of Agriculture staff was later severely undermined by budgetary restrictions and increasingly hostile official attitudes to Palestinian agriculture.

One of the most visible indicators of the degree of modernization of agriculture is the rate of application of purchased production inputs. Table 4-7 shows that the dollar value of production inputs rose over the period 1969 to 1987 by 12 times in the West Bank and 5.3 times in Gaza Strip. Despite this phenomenal rise, the ratio of purchased inputs to the total value of agricultural production remained considerably lower than in Israel (around 34 per cent in the OPT against 57 per cent in Israel). The higher ratio in Israel is attributed largely to higher wage rates and to the minimal role of (unpaid) family labour in Israeli agriculture. If "purchased" labour is excluded, the ratio of modern purchased inputs to the value of agricultural output is probably about the same in both Israel and the occupied Palestinian territory.

There are many indications of the wider dissemination of modern inputs in OPT agriculture. For instance, the number of tractors in the West Bank rose from 459 in 1970 to 3,972 in 1987, and in Gaza Strip from 36 to 680. 38/ Measured against cultivated area, the ratio is 469 dunums per tractor in the West Bank and 317 per tractor in Gaza Strip. The quantity of fertilizer used in the West Bank increased from 4,000 tons in 1968 to 18,000 tons in 1981. What has probably been more important is the wider dissemination of some highly sophisticated inputs which are less easily quantified, such as hybrid seed strains, growth hormones, weed killers, and foliar sprays.

The wider dissemination of modern production inputs has been accompanied by a substantially improved technological absorptive capacity. There has been a marked degree of variation in this regard, where the highest level of technological aptitude is that prevailing in irrigated vegetable plantations cultivated in greenhouses. However, there is still strong conviction among agricultural experts that the level of use of modern production inputs, even on most intensive farms, is lower than optimal. The situation is particularly grave in most rainfed patterns of farming which are characterized by a low degree of commercialization. There is still ample room for improving production techniques and raising productivity in most farming patterns.

Despite marked improvements in productivity, many experts believe that the pace of productivity growth in the OPT is slower than that attained in competing countries, especially in Israel. In fact, some extension agents indicate that there has been a marked slowdown in productivity growth during recent years. These developments are attributed to several factors. The inferior level of local research and extension services is of course a very important one. Similarly, scarcity of financial resources has played a crucial stunting role, since it impedes the acquisition of modern inputs.

In addition, slower growth in productivity is believed to have been aggravated by low educational attainment of the agricultural labour force. This fundamental feature is dramatically reflected in table 4-8 which shows that 70 per cent of agricultural workers in the West Bank and 60 per cent in Gaza Strip have had only six years or less of schooling (in fact nearly half of them had no schooling at all). The educational level of agricultural workers is considerably inferior to the overall rate (see table 4-8). This feature of the agricultural labour force has obstructed a more speedy transfer of technology and restrained the absorptive capacity of workers in that sector.

The educational level of the agricultural labour force may have undergone a significant improvement during the past four years in the wake of the Palestinian uprising. Owing to severe restrictions on the flow of OPT workers into Israel, especially those with a suspected security record, and because of a sharp constriction in employment opportunities in neighbouring labour markets, many "educated" young men had begun to seek employment in agriculture. Unlike their parents or elder brothers already employed in farming, the new entrants to agriculture were far more educated and politically motivated. So far, no data are available on the number and educational level of those workers. In any case, it is too early to discern any long-term impact of this phenomenon on OPT agriculture. It is quite likely that the majority of the new wave of educated farmers may still opt to leave agriculture once employment elsewhere becomes available.

2. Labour productivity

As typical of all developing countries, the West Bank and Gaza Strip agricultural sectors were saturated with labour prior to 1967. Agriculture was in effect the residual claimant to that part of the work force unable to find more remunerative employment in other sectors. Not surprisingly, labour productivity was very low, since 40 per cent of the total work force generated around 30 per cent of gross domestic product. The agricultural labour market was characterized by a marked degree of underemployment and seasonal unemployment. Marginal productivity of labour under those circumstances was either zero or close to zero.

Following Israeli occupation, the labour market was subject to far-reaching changes which ultimately precipitated a massive drain of labour from agriculture. Higher yields attained by a smaller work force has led to a marked rise in labour productivity, as measured in value terms. Table 4-9 shows that agricultural GDP per worker has risen by 7.4 and 5.8 times in the West Bank and Gaza Strip, respectively, during the period 1971-1986. Agricultural labour productivity in Israel rose during the same period at a lower pace, yet it was still more than three times higher than in the OPT.

Growth in agricultural labour productivity has passed through a number of stages during the occupation years. Table 4-10 shows that the rate of growth in the value added per worker reached its peak during the early 1970s. Labour productivity took a slower pace during the second half of the 1970s, slowing progressively during the 1980s. This was due mainly to a slower decline in the agricultural labour force and smaller rises in yields during that period. The reasons for the slackening in output increase were identified earlier in this chapter. Productivity in value terms has further suffered from a worsening of the terms of trade, tougher restrictions on water use, and fewer opportunities outside agriculture for surplus workers.

E. Employment in agriculture

As in most developing countries, agriculture in the West Bank and Gaza Strip was for a long time the residual claimant of labour. There are no reliable data on the agricultural labour force prior to 1967, but available gross estimates suggest that it was 40 per cent of the total labour force in the West Bank and 33 per cent in Gaza Strip. 39/ Because of agriculture's weak connection with the market economy, agricultural employment has been characterized by a marked degree of underemployment and seasonal unemployment.

The structure of the agricultural labour market began to change rapidly as of 1968, when the Israeli authorities permitted OPT workers to seek employment inside the "green line". The primary sources for the influx of labourers commuting into Israel were rural communities and refugee camps already congested with unemployed workers. Consequently, the size of the labour force employed in agriculture fell rapidly, both in relative and absolute terms. The total number of workers employed in this sector inside the occupied territory, i.e. excluding those working in Israeli agriculture, declined by 38 per cent in the West Bank and 48 per cent in Gaza Strip during 1969-1987 (see table 4-11). Measured against the total labour force in each region, the drop in the relative share of agriculture was even more striking (from 44 per cent to 17 per cent in the West Bank, and from 33 per cent to 9 per cent in Gaza Strip).

The reduction in the agricultural labour force affected farmers more severely than hired workers, especially during the early years of occupation. According to official data, the number of West Bank farmers declined during 1970-1973, from 33,800 to 26,000, i.e. at a rate four times higher than the decline in hired workers. 40/

Employment in agriculture underwent another major transformation following the Palestinian uprising in late 1987. As a consequence of drastic disruptions in employment in Israel, and in response to national calls for separation from Israel, many Palestinians started to take up farming. The number of workers in agriculture increased during 1987-1990 by 30 per cent in the West Bank and 44 per cent in Gaza Strip. However, given the noticeably unstable conditions in the OPT labour market, it is too early to perceive this rise as more than a temporary adjustment.

Labour mobility out of agriculture is a common feature of economic development in most developing countries. For instance, agricultural employment in Israel dropped from 17.3 per cent in 1960 to 4.2 per cent in 1990 41/ and in Jordan from 18 per cent in 1975 to 7.3 per cent in 1990. 42/

This phenomenon is underlain by a number of push and pull factors set in motion following the advent of occupation. Such factors include a higher rate of mechanization, rising opportunity cost of labour, and sharply rising cost of living. These factors have forced thousands of farmers to leave farming and choose the apparently more remunerative option of becoming hired labourers - largely in Israel.

In addition to the previous factors, profound transformations in the profitability of agriculture have also affected the dynamics of labour shifts. The crux of the problem lies in the sharply declining profitability of most patterns of farming which were in existence prior to occupation. Production costs in those branches rose at rates much higher than the prices of their final products, while productivity did not rise at a compensating rate. Of course, there were other factors involved in this process, such as the poor quality of land, increasing problems in regard to the quantity and quality of irrigation water, and most importantly, the free entry of subsidized Israeli produce into local Palestinian markets. The impact of declining profitability was most pronounced in rainfed agriculture owing to its intensive use of labour, the marginal quality of land it usually occupies, and its absolute dependence on climatic factors.

1. Composition of the agricultural labour force

In addition to a pronounced decline in its aggregate size, the agricultural labour force has undergone several changes in its composition. This study has identified the following trends:

(a) The ratio of owner-operators in the agricultural labour force rose steadily. Table 4-12 shows that their share in the West Bank rose during 1969-1985 from 75.5 per cent to 91 per cent, and in Gaza Strip from 36.7 per cent to 78.5 per cent. The sharp drop in the ratio of hired workers was caused by the pressing need to minimize paid-out production costs in order to survive competition with subsidized Israeli produce. Hiring fewer workers was facilitated by the introduction of machinery and modern production technology at a relatively fast pace, as was outlined earlier.

(b) Women provide a major part of the agricultural labour supply, estimated in 1981 at around 70 per cent of the total agricultural labour force. 43/ Around two thirds of female farm labour is contributed by members of farm families, usually on a seasonal basis.

(c) School children and elderly members of farm families provide significant amounts of labour input. The share of this group was estimated at 10 to 15 per cent of the total agricultural labour force.

(d) The contribution of family heads to farm operations is confined largely to weekends and peak seasons. The rest of their working time is allocated to other jobs, mainly in Israel, and to a lesser extent in the occupied territory itself.

The above-mentioned changes in the structure of the agricultural labour force have helped farmers avoid much of the impact of unfavourable transformations in labour markets. This experience provides useful indicators to future planners of OPT agriculture.

Palestinian development experts view with great concern the adverse transformations in the profitability of rainfed farming and the ensuing decline in the employment potential of agriculture. They argue that this process has accelerated the desertion of land, undermined the productive potential of those labour-intensive branches which failed to mechanize (e.g. olives), and transformed a large segment of peasants into migrant labour. In reaction to this trend, Palestinian planners attach very high priority to seeking ways which would help stop this drain, and possibly reverse it.

2. Income situation

In addition to the impact of transformations in productivity and in the labour market, profitability is also deeply influenced by the imbalance in the price structure, whereby prices of production inputs rose at much higher levels than those of farm products. Table 4-13 shows, for instance, that the overall average increase in the prices of major production inputs amounted to around 906 per cent. Whereas the average increase for major farm products amounted to 341 per cent. A major reason for the relatively slow rise in the prices of farm products is the entry of subsidized Israeli produce into local markets, sometimes offered at dumping prices.

Growers have had to resort to numerous means in order to adapt to the radical changes in the economic setting of agriculture. Their main thrust was directed at raising productivity and reducing their paid-out costs to the minimum. In general, all labour-intensive and rainfed branches of farming, characteristic of the West Bank's hilly land, have been adversely affected. Productivity increases did not compensate for the unfavourable price structure (e.g. olives, almonds, figs, vegetables and grain crops grown under dry conditions). In contrast, productivity in most intensive patterns of farming rose at a pace which still made possible a positive net income, despite fierce competition in local and external markets.

The average income earned by farmers is determined, in the final analysis, by changes in total income originating in agriculture and in the number of farmers. Table 4-14 shows that the average income per farmer had risen substantially during 1970-1988. This rise was a direct result of the pronounced growth in income, on the one hand, and the marked reduction in the number of farmers, on the other.

The data in the table indicate that farmers' income had risen by the late 1970s to 4.3 times its 1967-1969 level in the West Bank, and by 2.5 times in Gaza Strip. However, farmers' income dropped markedly during 1983-1985, as measured against the 1978-1980 average income (by 34 per cent in the West Bank and 26 per cent in Gaza Strip).

Moreover income earned by farmers was much higher and rose at faster rates than that of wage earners. This has led to a growing gap in income distribution patterns between farmers (whether owners or share-croppers) and hired workers. The gap was more pronounced in Gaza Strip than in the West Bank.

3. The impact of labour migration on rural communities

The interaction of labour shifts and technological change has had far-reaching consequences on rural communities in the occupied Palestinian territory. While these consequences are too complex to be ascertained here, those with a bearing on agriculture merit a special focus.

The question of where those who leave agriculture go is especially important. Unlike the pre-1967 period when rural migrants went largely to the Gulf States and Jordan, since 1967 they were absorbed mainly in the Israeli labour market, where income derived from employment was higher than that earned from most patterns of agriculture in the OPT. Only very few of those workers were reabsorbed inside the occupied territory, because wages offered to unskilled workers were much lower than those attainable in Israel.

The most visible impact of the sudden drain of surplus labour from rural communities was that of sharply improved living standards. The multiplier effect of higher disposable income levels on other economic facets of rural communities has resulted in numerous spin-offs. Internal trade and a wide range of service sectors have also witnessed a pronounced boom.

Intensive patterns of farming did not suffer by the drain in labour. As was explained earlier, farm families have mobilized all available labour resources, most with a negligible opportunity cost, so that they could withstand competition from Israeli produce. In fact, it is possible to argue that the employment of some family members in Israel has helped their families to cover a major part of the relatively high investment portfolio required for commercial farming patterns. In the absence of institutional credit sources, this role was especially critical. Furthermore, those rural migrants employed in Israeli agriculture have certainly played a positive role in facilitating technology transfer to their family farms.

The situation with regard to rainfed patterns of farming, however, is fundamentally different. The low pace of mechanization, on the one hand, and the soaring level of wage rates, on the other, have made it very difficult to provide the services ideally required for such farming (e.g., terracing of slopes, pruning of trees, animal ploughing of hilly slopes). Consequently, there has been pronounced deterioration in those patterns of agriculture. This is a particularly serious issue in the West Bank, where rainfed farming dominates 95 per cent of the cultivated land area.

Chapter V

SUPPORTIVE INSTITUTIONS

A. Agricultural education

Pre-college agricultural education is provided in the West Bank through two schools, Khadourie Agricultural Institute and A'rroub Agricultural School. The former institute was founded by the British Mandate in 1930, and is located in Tulkarm, which is in the centre of the fertile coastal plains of Palestine. Khadourie has undoubtedly achieved marked success in meeting the needs of Palestine and Jordan for white-collar agricultural technicians, mainly as teachers of agriculture and biology, and as extension agents in the departments of agriculture. Consequently, its curricula have gradually evolved to produce academically oriented graduates, instead of field-motivated practitioners.

The A'rroub Agricultural School was established in 1962 (near Hebron) with the twin objectives of producing qualified farmers while simultaneously trying to qualify students to pursue their college education, should some of them wish to do so. This confused recipe of objectives proved unfeasible.

Following occupation, the situation at Khadourie and A'rroub has deteriorated still further. The Military Administration is, in principle, opposed to all improvements which may entail additional budgetary allocations or, for that matter, help graduates take up farming as their profession. Graduates of both schools are confronted with severe unemployment problems, and most of them are forced to seek employment outside their field of study.

Agricultural education in the Gaza Strip is restricted to Beit Hanoun Agricultural School. This school was founded shortly before the onset of occupation on an area of 216 dunums. It admits students from the third preparatory class for a three-year programme of study, and also conducts a two-year programme addressed to high school students who pass their Tawjihi exams. The school is administered jointly by the Department of Education and the Department of Agriculture. The involvement of the latter is restricted largely to the research programme conducted on the school's farm.

There is as yet no full-fledged college of agriculture in any OPT university. This is attributed mainly to the persistent refusal of the Israeli authorities to license such a college. After being repeatedly denied a licence, An-Najah University in Nablus initiated in 1987 a small department of agriculture within its Faculty of Sciences. In 1989, the Israeli authorities agreed to license a college of agriculture in Hebron University. Since then, this university has initiated its own Faculty of Agriculture.

Neither of the agricultural programmes at An-Najah or Hebron universities have so far developed into serious efforts with an impact on OPT agriculture. The long delay in issuing the required permit was certainly a major reason for failing to launch a vigorous take-off, but there were other factors as well. Scarcity of financial resources and the lack of adequate technical expertise in the planning of higher agricultural education were important impediments. Furthermore, many Palestinians have been deeply concerned by the detrimental consequences likely to ensue as a result of having two colleges of agriculture. This may entail substantial waste of scarce resources, and lead to damaging competition for funding and staff, unless clearly distinct specializations develop between the two.

It is important to note in this connection that the occupied territory does not suffer a shortage of agricultural graduates. However, because of a clearly slanted theoretical orientation in neighbouring colleges of agriculture, graduates have displayed very little inclination to practise farming. The implications of this deficiency have further ramifications, exacerbated by the near total absence of institutional sources of credit. Returning agricultural graduates have been usually preoccupied with the desire to seek a paid job in government service or in other public institutions. If they fail to obtain such employment, many emigrate to neighbouring countries.

B. Agricultural extension

Agricultural extension services in the West Bank were undertaken prior to occupation by two institutions, the Department of Extension (in the Jordanian Ministry of Agriculture), and by service technicians working for dealers of farm supplies. As most agricultural companies were based in Amman, their extension and credit services came to an abrupt end immediately following occupation. This left all extension activities in the West Bank to an ill-prepared and war-shattered Department of Agriculture.

During the first three to four years of occupation, the Departments of Agriculture in the Israeli Military Administration in both the West Bank and Gaza Strip pursued an active expansionary policy focused on modernizing agriculture. This interest was translated into several ambitious policies, starting with the expansion of agricultural staff (e.g. 18 agronomists were added to the West Bank's staff over two years). Demonstration plots for new crops and production techniques were organized with such intensity that they practically covered all farming areas. Credit facilities and food aid were advanced to pioneering farmers at concessional terms. Marketing of produce in Jordan was aggressively promoted through a liberal export-subsidization scheme financed by the Government. The flow of farm produce to Israel was not permitted, yet it was not rigorously resisted when it happened. As a result of these developments, production practices were modernized and some patterns of farming attained high rates of growth.

Official Israeli interest in developing OPT agriculture was short-lived. Favourable policies were gradually superseded by noticeably depressive policies. This change was motivated initially by budgetary pressures arising from deeper recession in Israel. It has been clear since the late 1970s, that agricultural policies in the Territories have become increasingly politicized.

The agricultural policy of the Government in the occupied Palestinian territory has gone through numerous stages during the past 25 years. As of the early 1980s, this policy seems to have been underlain by the following guidelines: 44/

(a) Maintaining the area under active cultivation to a minimum through direct means, such as confiscating or closing land through military orders and more subtle means, such as curtailing those patterns of farming which entail visible and long-term attachment of farmers to arable land. This applies to olive, grape, and almond cultivation. In contrast, the Department of Agriculture is far more interested in promoting seasonal crops, such as vegetables and grains. This lopsided sectoral emphasis is clearly spelled out in the annual plans prepared by senior Israeli officials in the Department of Agriculture. For instance, all pest control demonstrations in olive orchards have been stopped since the early 1970s.

(b) Controlling all water resources in the occupied territory, and restricting water use in Palestinian agriculture to a fixed quota is another high priority of Israeli agricultural policies. The intention is apparently to maintain the maximum share of usable reserves for current or potential Israeli use. One aspect of such policies is the imposition of stiff restrictions on the planting or replanting of citrus orchards. In contrast, farmers have been encouraged to uproot citrus trees and replace them with annual crops.

(c) Expediting the mobility of labour from rural communities into Israel or, alternatively, facilitating their transfer to neighbouring countries.

(d) Restraining growth in high-value agricultural branches, since these are conceived by occupation policy makers as Israeli specialties. These include, for example, certain branches of the poultry industry, flowers, strawberries, dates, avocados, etc.

(e) Maintaining the occupied territory as a backyard market in which Israeli marketing institutions can dump, as needed, low-priced farm produce. The OPT markets were often utilized to smuggle large quantities of Israeli produce into neighbouring Arab markets.

Israeli policy in regard to OPT agriculture is formulated by a high-ranking committee composed entirely of Israeli officials. Actual implementation is delegated to a small unit of Israeli officers in the Civil Administration of each of the two regions in the territory. The director of each unit, described as the Officer-in-Charge of Agriculture, is entrusted with the status of Minister of Agriculture, supposedly as defined in Jordanian law. The actual execution of agricultural policies and activities at the field level is performed by Arab staff through district offices of agriculture. Each district office includes 6 to 10 extension agents and a minimal number of support staff. The striking change in Israeli policies in regard to OPT agriculture is clearly exemplified by the sharp drop in the total number of Palestinian workers in the West Bank's Department of Agriculture: from 473 in 1976 to 168 at the end of 1990. 45/

C. Agricultural research

Agricultural research in the West Bank was undertaken prior to occupation by the Research Department in the Jordanian Ministry of Agriculture. This department operated for this purpose research stations, five of which were located in the West Bank. Following the onset of occupation, all research activities were placed under the direct supervision of Israeli researchers, mostly from the Volcani Institute. Research output was published in Hebrew, and was made available to local users on a very limited scale.

Local research activities collapsed completely after 1979, essentially owing to more stringent budget restrictions. All research stations were turned over to commercial production, and "surplus" staff were either transferred or dismissed.

D. Agricultural budget

Israeli intentions with regard to OPT agriculture are abundantly manifested in the budgets allocated for this purpose. The most striking observation in this regard is that real allocations for the Department of Agriculture were steadily curtailed until they covered only salaries and fixed expenses. This has led to the near total abolition of appropriations for promotional activities, such as demonstration plots, exhibitions, field days, and educational leaflets.

Information on public expenditure is scarce and is dealt with in utmost secrecy. A study of the West Bank budget of agriculture for 1991 reveals that allocations for research, statistics, extension, and training amounted to NIS 67,000 (around $30,000). This sum represents only 1.8 per cent of the Department's total budget. The rest is allocated to salaries and administrative expenses (see table 5-1). With such a static budget, extension staff are left with little to do, giving Israeli officials more reason to exercise further cuts in their number. A comparison of salaries and per diem allocations for Israeli and local staff indicates alarming disparities. The former's salaries, and transportation and per diem appropriations are, on the average, 3.6 times higher than those of local Palestinian staff.

The budget of the Department of Agriculture in the Gaza Strip displays similar anomalies. Salaries and wages accounted for 70 per cent of the total budget for 1991. The average salary for Israeli staff in the Department is 3.4 times higher than that of local staff (see table 5-2).

E. Agricultural cooperatives

The West Bank and Gaza Strip have a fairly long history of the cooperative movement. Several cooperative societies were established in the 1930s and 1940s; by 1948 there were more than 42 registered cooperatives in what came to be known as the West Bank. 46/ The majority of these societies were engaged mainly in providing seasonal loans to peasant farmers. After 1950, the cooperative movement was vigorously promoted by the Jordanian authorities in the West Bank and by the Egyptian Administration in the Gaza Strip.

1. Cooperatives in the West Bank

Despite a fairly long history and active official and international support, the cooperative movement in Jordan and the West Bank achieved only modest success. This is exemplified by several yardsticks, such as the size of membership and the scope of cooperative services. Table 5-3 presents a statistical review of West Bank cooperatives at the end of 1966.

The data in table 5-3 fail to reveal one important feature of the West Bank cooperative movement, namely, that the vast majority of agricultural cooperatives in 1966 were inactive and classified as "frozen". This includes more than 90 per cent of credit cooperatives, and a large proportion of other kinds of cooperatives. 47/ It was clear that most members viewed their cooperatives as a source of easy loans, and that their affiliation to their cooperatives did not go much beyond the mechanics of disbursing the funds occasionally made available to their organizations. The very low level of education and the poor understanding of cooperative ideals had certainly contributed to the fragility of agricultural cooperatives.

There are numerous features of the weak impact of cooperatives in Jordan's agriculture. Even if the figures on the number of cooperatives and size of memberships are taken at face value, it is still clear that the number of farmers who were members of cooperatives was relatively small, not exceeding 10 per cent of all farmers. 48/ The average size of loans advanced to members amounted to only JD 51 per farmer, 49/ considerably smaller than the actual needs of farmers for seasonal credit. No figures are published on the repayment record of cooperatives, because the recovery ratio was too low to be revealed to the public.

All these indicators point to a modest performance, even by the standards of 1966. Not unexpectedly, this deficiency led to the emergence of other sources of agricultural credit which proved much more effective in meeting farmers' needs. The Agricultural Credit Corporation (ACC) was the most important in the area of agricultural credit. By June 1967, the ACC had an outstanding volume of loans in the West Bank of about JD 1.7 million, which was about five times greater than the amount of loans advanced by cooperatives, according to information obtained during an interview with the Deputy Director-General of ACC. Agricultural companies also played a far more instrumental role than cooperatives in meeting credit needs of farmers. This was done mainly by providing customers with production supplies on credit in the form of deferred payment for purchases of farm supplies. The two poultry feedmills which were in operation in 1966, for example, had by the end of 1966 an outstanding volume of credit sales of JD 0.3 million. 50/

The sudden onset of Israeli occupation had immediate and far-reaching consequences for West Bank cooperatives. The head office of the Jordan Cooperative Organization ordered a freeze on all activities of registered cooperatives, although it approved the reopening of its three branch offices in Hebron, Jerusalem and Nablus. The Israeli authorities did not object specifically to that measure, but they made it clear that they wanted to impose full control on all cooperative activities.

The West Bank cooperative movement (and that of the Gaza Strip) were positively influenced by three major developments. First, there was the formation of the Jordanian-Palestinian Joint Committee (JPJC), entrusted with bolstering the "steadfastness" of Palestinian residents in the occupied territory. A similar interest was expressed by a number of foreign voluntary agencies which emerged and grew rapidly during the 1980s. The Joint Committee and other voluntary agencies envisaged a primary role for cooperatives in expediting their programmes. Thirdly, the Military Administration seems to have come to the conclusion that the reactivation of cooperatives - as long as this process was performed under strict Israeli control - might offer Israel attractive political and economic gains. In addition to syphoning off large amounts of money, most of which would end up in Israel, the Military

Administration sought to register new cooperatives and in permitting them to receive aid, gain extra leverage in consolidating its control over local communities.

In response to the revived interest in cooperatives, the West Bank witnessed a surge of cooperative activity. Many new cooperatives were registered, and by the end of 1989, there were 352 agricultural cooperatives. Table 5-4 shows the vocational distribution of cooperatives and their date of registration relative to occupation.

More than two-thirds of all cooperatives are agricultural. However, the data do not reveal a fundamental feature of West Bank agricultural cooperatives, namely, that the vast majority of them have been defunct cooperatives inherited from the pre-occupation period. The number of cooperatives registered since June 1967 is 295, of which 176 are agricultural.

A critical evaluation of the record of agricultural cooperatives shows that they have succeeded so far in avoiding being used as political tools by those outside the cooperative movement. There is evidence, however, that many cooperatives have been transformed into power bases serving the ambitions of local political leaders. In addition to violating basic cooperative ideology, the politicization of cooperatives has greatly undermined their proclaimed economic objectives, especially in the areas of marketing and finance.

On the marketing side, which is presumably their major area of operation, the role of regional marketing cooperatives has been reduced to issuing the documents needed to channel produce to Jordan. They have done very little to open new markets, improve auxiliary marketing services, or stabilize prices. Their role as a source of finance for member farmers has been limited to symbolic gestures proffered on members when funds are occasionally made available to those cooperatives.

The largely marginal role of cooperatives in developing agriculture in the West Bank and in the Gaza Strip may be attributed to many complex factors. The literature on team or cooperative efforts in rural communities in most Middle East countries shows clearly that farmers feel much more comfortable with individualistic approaches to problem-solving and meeting perceived needs. This is an important reason why the track record of cooperatives shows far more failures than successes, even prior to Israeli occupation.

The onset of occupation, and ensuing dual affiliation of the cooperative movement, has created additional problems and bottlenecks which can be summarized as follows:

(a) Very slow and noticeably selective registration of new cooperatives. New applications remain under "study" for a very long time, sometimes up to several years. The political affiliations of applicants are carefully scrutinized before registration is approved.

(b) Lengthy registration procedures for new cooperatives by the Jordan Cooperative Organization (JCO) in Amman. This entails additional complications and loopholes which put the ordinary farmer(s) at a clear disadvantage.

(c) Strict and selective controls on finance. Each new project proposed by any cooperative requires approval from numerous Israeli authorities before grants or loans can be solicited. Approval is given on a selective basis and often after a long delay.

(d) Inadequate service infrastructure. Such auxiliary services as education, training, research and auditing have all sharply deteriorated under occupation. The situation has worsened in view of the abnormal working relations between the JCO and West Bank cooperatives.

(e) Fearing that general assembly meetings of regional cooperatives may be exploited in order to infiltrate "collaborators" onto their boards, cooperatives were reportedly advised by the JCO to suspend such meetings and not to hold elections for management boards. This measure has practically abolished democratic management - one of the fundamental principles of the cooperative ideology - and has paved the way for maintaining other forms of control in many cooperatives.

2. Agricultural cooperatives in the Gaza Strip

There are five agricultural cooperatives in the Gaza Strip, all registered since 1967 (see table 5-5). Unlike those in the West Bank, the Gaza cooperatives are more professional in nature, and closer to the genuine identity of cooperative organizations. Furthermore, they are less dependent on external funding sources and less vulnerable to political pressure. An important reason for these attributes stems from not having any connections with the Jordan Cooperative Organization; this has compelled the Gaza cooperatives to depend on their own organizational and financial means.

Agricultural cooperatives in the Gaza Strip have succeeded in performing modest, but more tangible, services than most of those in the West Bank. There are, however, some disturbing signs with regard to their course of development. Gaza Strip cooperatives are becoming increasingly susceptible to the damaging effects of "aid" received from NGOs. Furthermore, they have become increasingly susceptible to local disputes and to competition between traditional leaders, just as in the West Bank.

F. Agricultural finance

Sources of agricultural finance in the West Bank had gradually become differentiated by 1967 into several institutions, each with a specific frame of reference. 51/ Medium- and long-term credit was handled by the Agricultural Credit Corporation (ACC) through its regional branch offices. ACC was receptive to applications for development purposes at the subsidized interest rate of 6 per cent. Providing production loans for seasonal purposes was delegated to the Jordan Central Cooperative Union (JCCU) through its member cooperatives at an interest rate of 9 per cent.

Seasonal lending was undertaken on a more effective scale, though mostly in kind, by dealers of farm supplies and middlemen (see table 5-6). Usurers occupied a minor role as a source of production credit in the West Bank, although their role might have been more significant in Jordan.

The West Bank had, in May 1967, four branches of the ACC and three of the JCCU. The volume of outstanding loans advanced in the West Bank by both institutions was estimated at JD 2.1 million, 66 per cent of which was advanced by ACC and 34 per cent by JCCU. 52/ Although there is no quantitative evidence on the magnitude of credit facilities advanced by private firms and commission agents, their role has certainly been critical in meeting short-term credit needs. On the whole, it seems reasonable to conclude that West Bank farmers had had a fairly integrated though somewhat limited range of credit services. This would explain the relatively rapid expansion in many farming sectors during the pre-occupation period.

The situation regarding agricultural finance changed sharply in the wake of Israeli occupation in June 1967. The Government of Jordan closed down all West Bank ACC branches and refused to permit lending to West Bank farmers by Jordanian branches. Although JCCU branches were permitted to re-open, they were nevertheless instructed to freeze all credit activities. Commercial banks followed suit and also closed down, albeit temporarily, all their West Bank branches.

The Military Administration tried during the early years of occupation to promote its own agricultural credit programme. Loans were advanced to "eligible" borrowers on concessional terms, but then only after the approval of the regional military governor. Local farmers quickly realized that the Government's lending programme was utilized to provide the Military Administration with extra leverage in its dealings with the local community. This was enough to convince an inherently suspicious rural community to keep away from Israeli loans, and even attached a stigma to such "benevolence".

The money market tightened considerably in the 1970s as Israel moved deeper into recession and rapid inflation. It became clear that the constriction of agricultural finance had become one of the most important reasons for the retarded growth of West Bank agriculture. The deadlock in agricultural finance then began to loosen gradually after 1977. This came in response to the emergence of foreign voluntary agencies and the formation of the Jordanian-Palestinian Joint Committee (JPJC) as a credit institution specialized in channelling aid to residents of the occupied territory. Furthermore, there have been several efforts by a number of local and foreign institutions aimed at alleviating the impact of the acute shortage of agricultural credit resources.

The following is a brief evaluation of the role of major institutions involved in funding agriculture in the occupied territory.

1. The Jordanian-Palestinian Joint Committee (JPJC)

The JPJC commenced activity in 1979 with the ambitious aim of bolstering the steadfastness of Palestinian residents in the occupied Palestinian territory by rejuvenating their economic and social institutions. To enable the JPJC to shoulder its assignment, it was promised by the 1978 Arab Summit in Baghdad an annual grant of $150 million. The JPJC operated actively for about five years, until it was forced to freeze most of its developmental activities in 1985 due to a shortage of funding.

The record of the JPJC during its main period of activity was characterized by many shortcomings and problems, especially in the area of agriculture. This is clearly evidenced by the following observations:

(a) Out of a pledged funding by Arab States of just over $1 billion for the period 1979-1985, the Committee actually received a sum of $485 million, i.e. less than 50 per cent of the amount expected.

(b) The Committee did not display adequate concern for agriculture. Up to 1984, it channelled to this sector a total of only $31 million, equivalent to 8 per cent of its portfolio. 53/

(c) The policies and procedures promulgated by the Committee were sometimes biased towards wealthy applicants and local leaders. As a consequence of being managed by two sides which often had competing or conflicting interests, the executive management of the Committee was open to a marked degree of favouritism. The relatively large expense outlays associated with obligatory travel to Amman constituted a built-in deterrent to middle class and poor applicants.

While the experience of the JPJC in the economic and social life of the Palestinian people in the West Bank and Gaza Strip remains a subject of debate, there is much to be learnt from the mistakes of those years.

2. Non-governmental organizations

The prolonged occupation of the West Bank and Gaza Strip has stimulated the emergence of a large number of fairly vigorous organizations with a profound interest in the social and economic life in those territories. These institutions are referred to as non-governmental organizations (NGO) or private voluntary organizations (PVO). The number of such organizations operating in the OPT has mushroomed in recent years to over 40, but those which function in the area of agriculture in a tangible way only amount to about 10.

NGOs and PVOs are characterized by a marked degree of heterogeneity in regard to their objectives, sources of funding, modes of operation, and political affiliation. It is, therefore, difficult to come up with a generalized evaluation of their record. However, it is possible to draw the following conclusions in regard to the activities of these organizations in the area of agricultural development:

(a) All NGOs and PVOs operating in the occupied Palestinian territory have tended to give low priority to agriculture. The combined value of aid advanced to this sector during the 1980s was in the range of $2 to 3 million per annum, which amounted to no more than 10 per cent of their total aid outlays in the OPT (i.e. about the same level of the spending of the JPJC on agriculture). This level of funding was far too low to stimulate active growth in agriculture. Aid organizations attribute their low key interest in agriculture to stiff Israeli opposition in regard to projects related to this sector. This is certainly true, but it is not the only reason for the NGOs' lack of interest in this sector. Many local experts suggest that aid organizations seem to have been discouraged by the complexity of the problems impeding agricultural growth in the OPT. They opted instead to allocate their funds to the more visible and less problematic types of projects such as construction of roads, schools and clinics, and purchasing equipment and machinery.

(b) Notwithstanding the low levels of funding allocated to agriculture, the modus operandi of channelling aid to this sector has in many cases resulted in adverse consequences. Funding was provided in the form of grants advanced to a few privileged groups and individuals, often on the merits of the personal influence of the recipients rather than on priority needs or the economic viability of projects. Not surprisingly, the vast majority of projects sponsored by aid organizations have ended in failure.

(c) A realistic assessment of the consequences of NGO and PVO involvement in OPT agriculture cannot overlook the social and psychological implications of a policy centred on promoting development through handouts to individuals and institutions. By so doing they have not solved the chronic problem of credit scarcity and their practices may in fact have made that job more difficult. Selective subsidization of individual growers and institutions has distorted market forces, perpetuated inefficiencies, and undermined genuine development.

3. Local credit institutions

The prolonged closure of professional agricultural credit institutions and the failure of aid agencies in meeting the capitalization needs of farmers in the occupied territory has prompted the inception of a number of local credit institutions. The following is a list of those institutions which were in operation as of 1991:

	Established
Agricultural Development and Credit Company (ADCC)	1986
Economic Development Group (EDG)	1986
Cooperation for Development (CD)	1987
United Agricultural Company (UAC)	1989
Technical Development Company (TDC)	1990

All these institutions, except for CD, were registered in Jerusalem as non-profit companies, and each is managed by a board of directors composed of local experts. CD is the regional office of a United Kingdom based NGO; it operates in the occupied territory under the umbrella of UNRWA. All provide funding to eligible individuals, and sometimes to institutions, only on a credit basis. None of them provides grants to its customers. UAC advances loans only in kind; it is the only one among them based outside Jerusalem, in Ramallah. The major funding source is the European Community. Each raises additional funds, on a much smaller scale, from other sources such as the Welfare Association, and Spanish, French and Canadian NGOs.

These institutions do not view themselves as full-fledged credit organizations set up to meet the capitalization needs of OPT businesses. More fittingly, they focus on creating employment for unemployed young men and women by helping them initiate their own small businesses. Projects are mostly of a productive nature, either in agriculture or small-scale industry.

The record of local credit institutions over the past few years has demonstrated clearly that more could be done to promote growth in the indigenous productive base and to generate employment through entrepreneurship. Furthermore, promoting development through loans has proved to be far more effective than the handout policies adopted by foreign funding institutions.

However, the successes of local credit organizations cannot conceal other less encouraging lessons which have been acquired over the past few years. It is now clear, more than ever before, that at the present level of funding, these organizations have essentially served merely an educational purpose, and not a real developmental need. The aggregate size of funding available to them, until 1990 around $3 million a year, is far too small to have a real impact on the economy of the OPT. Because of scarcity of resources, the rate of lending does not exceed 10 per cent of the number of viable applications submitted by eligible borrowers. During their more than four years of operation, local credit organizations have managed to fund only around 500 projects involving no more than 1,000 borrowers. When local development specialists complain that farmers in the occupied territory do not yet know where to go for a loan it should be seen against this background.

G. Alternative agricultural institutions

Palestinian development activists have been deeply concerned about the declining role of the departments of agriculture in the West Bank and Gaza Strip. This has prompted several local groups to establish alternative institutions which are specifically targeted to fill the gap. By 1991, the number of agriculture-related service centres had risen to over 20, but the largest and probably most active of them were the following (each is introduced by a quotation from its publications):

1. Main institutions

(a) The Palestine Agricultural Relief Committee (PARC)

PARC "was formed in 1983, in response to the lack of a Palestinian agricultural extension system in the West Bank and Gaza Strip". By 1991, PARC had evolved into a relatively large institution with around 30 technicians (agricultural engineers and veterinarians). PARC's services touch on nearly all aspects of agriculture, especially in the area of applied research, extension, and provision of production inputs.

(b) The Technical Centre for Agricultural Services (TCAC)

TCAC "has been established in the occupied territory as a result of the difficult circumstances found in agriculture here. These problems are concerned with a lack of extension services, and experienced and scientific agricultural research in the area." The objectives of the Centre include, among others, "designing an independent local agricultural policy", "directing and encouraging agricultural research using modern scientific methods", and assistance with "establishing large, comprehensive projects with a sound economic base".

(c) Applied Research Institute-Jerusalem (ARIJ)

ARIJ was established in 1990 "to conduct work on a systematic basis for augmenting the local stock of scientific and technical knowledge and use it for devising appropriate technology and improved practices and applications for the betterment of the agricultural community in the occupied territories".

(d) The Development Work Centre (MA'AN)

MA'AN is a development centre which has addressed itself to meeting extension needs, mostly in the area of technical publications and educational seminars. The Centre deals with broad development issues, but has a clear focus on agriculture.

2. Registration status

The above-mentioned Palestinian research and extension institutions are registered as legal entities, mostly as non-profit companies or "Ottoman" charitable societies. The Israeli authorities do not seem to have taken a hostile view in regard to their legal standing or operational activities.

3. Management of development centres

All major development institutions, including those mentioned above, are managed by boards of directors recruited by principal founders from among their experts and activists. As most of these institutions have a distinctive political or factional affiliation, the choice of board members rarely cuts across Palestinian political lines. Quite often, each board is dominated by one central figure who assumes the real power in the institution.

4. Sources of funding

Development institutions do not seem to face major problems in raising funds, whether to cover overhead expenses or operational costs. The main funding sources are European NGOs and Governments, which seem to be well aware of the political and factional context of local development institutions. Most funders are also well aware of the pronounced duplication and competition which exists between institutions. It is evident, however, that most NGOs prefer to stay clear of Palestinian factional politics. One way of doing that is by giving money to institutions of all political stripes, sometimes with only secondary concern as to the viability of proposed projects.

Chapter VI

MARKETING OF FARM PRODUCE

Marketing and trading issues play a critical role in the agricultural economies of the occupied Palestinian territory. This applies in different ways and for different reasons to both domestic and export markets. The full ramifications of trading and marketing issues relative to farm products in the West Bank and Gaza Strip are too complex to be fully evaluated in this study. This chapter will include a brief analysis of the marketing and trade conditions for local and export markets, together with a description of the marketing infrastructure.

A. Marketing infrastructure

A major aspect in regard to the marketing of farm produce is that bearing on such vital services as the quality of products, their price levels, and the consistency of supply. The competitiveness of Palestinian suppliers in regard to all these attributes is an extremely important determinant of their success in minimizing imports from Israel. There are conflicting signals in regard to the relative standing of Palestinian growers, *vis-à-vis* both Israeli and Jordanian producers.

1. The organizational infrastructure

The organizational infrastructure bearing on agricultural marketing is strikingly inadequate. In the absence of a national authority, no official body has undertaken the assignment of regulating and supervising marketing operations. The major concern for the marketing staff in the Department of Agriculture is to regulate and maintain at a minimum the flow of OPT produce into Israel. The role of West Bank cooperatives in the marketing process is very limited, since it is restricted basically to issuing certificates of origin on behalf of the Jordanian authorities. Some trial shipments of vegetables were attempted during 1988-1990. The Gaza cooperatives were somewhat more active in their marketing services, but so far, they too have not played a tangible part, either in the marketing of vegetables or of citrus.

There are three organizational structures which may play a representational role in regard to agricultural trade and marketing under the present circumstances. These are: the West Bank's Agricultural Cooperative Union, the Benevolent Society in the Gaza Strip, and the Citrus Producers Union in the Gaza Strip. These organizations are all registered legal entities, and are managed by Palestinians. The legal and political standing of these organizations may permit delegating to them some functions otherwise performed by national official marketing bodies, such as negotiating terms of trade and concluding trade agreements. The signing of a marketing agreement between two of those organizations and the Government of Israel relative to direct exports to Europe has set a useful precedent.

2. The physical marketing infrastructure

Despite progress achieved in various aspects of the production process, the level of auxiliary marketing services is still low. Packaging is of unsatisfactory quality, both in terms of packing material (mostly wooden boxes) and design (often too deep and too large). Carton or styrofoam boxes are still not in common use. Transportation inside the territory and across the bridges is by open trucks which do not provide sufficient protection. No refrigerated trucks are used for trucking farm produce. Transportation cost across the bridges is very high, and constitutes a significant barrier to greater competitiveness. Grading of produce is not a common practice, except for citrus in Gaza. Cooling facilities are inadequate and often non-existent. Adherence to quality control in packing is often lacking.

The level of auxiliary marketing services is more deficient in regard to livestock products. Meat is offered for sale in rural communities without being adequately inspected for disease. Brucellosis has spread at epidemic proportions, and constitutes at present an important health hazard to consumers of mutton and dairy products. Hygienic deficiencies in the case of dairy products have reached critical levels over the past three years and in the wake of the proliferation of mini-dairy operations. The problem has been aggravated by the lack of adequate training for technical staff working in dairy plants and ineffective control by government veterinary and health institutions.

B. Local markets

Trading of farm produce in the West Bank and Gaza Strip is performed through a number of wholesale markets. There are nine such markets in the West Bank and four in the Gaza Strip. 54/ Six of these markets derive their supplies directly from producers which, in turn, supply other wholesale markets.

The main function performed in wholesale markets is selling goods by open auction. Each market is dominated by a number of commission agents who render their services at a commission of around 5 per cent. Wholesale markets operate under competitive conditions, but in some cases producers are obliged to channel their produce to specific commission agents due to outstanding credit obligations. No auxiliary services are performed in wholesale markets other than providing farmers with wooden containers and open truck transportation. Cold storage facilities are available in some of these markets, but they are used almost exclusively to store produce imported from Israel and the Golan Heights.

1. Dynamics of supply and demand in local markets

By virtue of their noticeably diversified climatic and topographic attributes, the occupied Palestinian territory (OPT) produce a fairly wide range of agricultural products. The vast majority of vegetables and fruits produced in the OPT are consumed in domestic markets. Marketable surpluses are restricted to a few kinds of fruit and vegetable crops. Total output of farm produce during the period 1985-1987 averaged 718,000 tons per annum, whereas local consumption, from all sources of supply, is estimated at about 483,000 tons (see table 6-1).

Local markets in the West Bank and Gaza Strip derive their fruit and vegetables from three sources, namely, local production, Israel, and the other sister territory. The relative ratio of each source is presented in table 6-1.

The data in table 6-1 reveal the basic dilemma which confronts OPT agriculture. The crux of the problem is that local production in the West Bank and Gaza Strip surpasses domestic consumption by about 235,000 tons (1985-1987 average). When imports from Israel are added, the total surplus soars to around 327,000 tons per annum. Against this background, the interest in expanding exports (including those destined for Israel) and minimizing imports assumes crucial importance. Furthermore, agro-industries are likely to play a major role in alleviating surpluses.

2. Institutional obstacles in local markets

The marketing system in the occupied territory is confronted with numerous problems and constraints of a regulatory nature. The most important is unconditional and uncoordinated entry of Israeli produce to local Palestinian markets. Because these local markets are wide open for cheap imports from Israel, producers sometimes have to cope with formidable problems in disposing of their produce.

Channelling of West Bank (and Gaza Strip) produce to east Jerusalem markets is conditional on procuring permits like those required for selling inside Israel. This has denied OPT producers access to what had always been one of their major markets.

Israeli authorities also have imposed numerous restrictions on the flow of produce between the West Bank and Gaza Strip. Those restrictions had escalated sharply in the wake of the intifada. By early 1991, traders between both parts of the occupied territory were required to obtain five kinds of permits, namely, the following: 55/

(a) Personal clearance from VAT and income tax authorities, and the police.

(b) A vehicle pass, which in turn is contingent on having the owner obtain clearances from VAT, income tax, and real estate tax authorities, local municipalities, and the police.

(c) A magnetic card (for Gazans only) for driver and companions.

(d) A produce permit.

(e) Departure of product permit, to be obtained on the day of transport or the day before, and after paying a fee of NIS 4 to 12 per ton.

In November 1990, the Israeli authorities decided to levy value added tax on olive oil transported from the West Bank to the Gaza Strip at the rate of \$5 per 17 kg can. 56/ Another measure concerned the route of vehicles commuting between the West Bank and Gaza Strip. Lorry drivers must adhere to a specified road connecting the Strip with the north-western edge of the

Hebron district. This restriction on the route of shipment entails enormous problems for drivers commuting between Gaza and northern parts of the West Bank, who could otherwise use much shorter and better quality roads.

The Israeli military authorities have often taken measures to disrupt marketing operations in local markets. This includes, for instance, imposing long curfews or military sieges during the picking seasons, and imposing an occasional ban on the flow of produce from one part of the West Bank to another. The 40-day curfew imposed on the West Bank and Gaza Strip during the Gulf War was a striking example of economic sanctions disguised as "security" measures.

Banning the entry of OPT citizens to Israel in the wake of the Gulf War caused acute marketing problems for West Bank producers. Transportation between traders in the southern and northern parts of the country was contingent on procuring permits of entry to Jerusalem. Obtaining the required permits was often difficult, costly and time-consuming.

There is a marked deficiency in market information on various major markets in the West Bank and Gaza Strip. This has often resulted in a pronounced degree of fluctuation in quantities of supply and price levels in wholesale markets.

C. External markets

External agricultural trade has always been of great significance to the West Bank and Gaza Strip, since each of the two regions incurs substantial surpluses of one or more commodities. No problems were encountered in this regard prior to the onset of Israeli occupation, because surpluses were small and access to neighbouring Arab markets, especially in Jordan, was unimpeded.

The conditions of trade governing agricultural produce in the West Bank and Gaza Strip were altered immediately after the territory fell under Israeli occupation. The two most important developments in this regard were the sudden elimination of barriers to trade with Israel, and the imposition of restrictions on the flow of produce across the bridges. Likewise, the flow of goods from the Gaza Strip to Egypt was also subject to new restrictions. These changes had strong repercussions on both domestic and external markets.

The magnitude and direction of agricultural trade have undergone fundamental transformations in all export (and local) markets. The developments which characterized each market were shaped by economic and political factors specific to each. The following is an analysis of trading relations with each of these markets as they have evolved during the past 23 years.

1. Agricultural trade with Israel

Soon after the opening of borders between Israel and the OPT in 1967, the Israeli authorities promulgated several regulations bearing on its trade relations with the territory. The conditions of trade with the newly occupied territory were structured so that they gave priority to Israeli interests: Israeli farm produce was permitted unconditional entry into OPT markets, whereas the flow of produce from the territory into Israel was permitted only on a selective basis, and only when deemed necessary to meet an occasional need.

(a) The impact of subsidies on OPT trade with Israel

The conditions under which agricultural trade was conducted between the OPT and Israel were clearly lopsided, and provided important "comparative advantages" to Israeli growers. The adverse consequences of this relation were further aggravated by the incentives and price stabilization schemes accorded to Israeli producers and agricultural trading firms. OPT growers, on the other hand, were denied these incentives, on the grounds that they were not Israeli citizens.

Israeli farmers have traditionally exerted enormous weight in the domestic Palestinian economic and political power structure. This privileged position rested on the premise that farmers were the pioneers for fulfilling the dream of a return to "the land of Israel". The unique perception of the role of agriculture in building the State has been expressed in generous support programmes covering all aspects of production and marketing and the full range of services supportive to agricultural development.

The agricultural support infrastructure in Israel has developed into a highly sophisticated set of organizations, each with a specific function. Some institutions are entrusted with the function of channelling subsidies to growers by supplying them with production inputs at reduced prices. For instance, water is provided at a heavily subsidized price through Mekorot, land rent is of a nominal value, and purchased inputs are supplied often at reduced prices through Hamashbeer. Moreover, the main form of subsidy is passed on through the relevant marketing boards, which are entrusted with the broad assignment of regulating production and marketing operations, each in a respective branch of production. One of the main objectives of these boards is to stabilize prices, resorting when necessary to channelling government aid to licensed producers.

Ascertaining the full range of subsidies accorded to Israeli farmers is not easy, because of the highly dynamic and complex nature of various support programmes. In general, subsidy rates were excessively generous until the early 1980s. In 1981, the total value of government subsidies to Israeli agriculture amounted to $1,448 million, i.e., equivalent to twice the total value of Israeli agricultural output for that year. 57/ Part of these subsidies is channelled to farmers, but most is allocated to reducing the sale price to consumers. The level of subsidies on prices of agricultural output in Israel, as in the 1987 budget, was specified as follows: 58/

Product	Subsidy as percentage of price
Milk	5
Eggs	30
Poultry	25
Irrigation water	50

In addition to subsidies on prices, other forms of government support are provided to farmers in the following ways:

1. Support aimed at reducing fluctuations in prices and seasonal supply. As mentioned earlier, this form of support is coordinated and implemented in collaboration with the marketing boards.

2. Reducing the risks encountered by farmers, by contributing to the insurance fund for natural disasters.

3. The government assumes major responsibility in all programmes and plans aimed at promoting agricultural exports. This includes promotion, market research, identification of new crops, and guaranteeing minimum prices for exporters.

The profoundly disparate subsidy structures available to farmers operating on different sides of the "green line" has entailed tangible comparative disadvantages for OPT growers who have to compete in the same markets. However, the adverse consequences of this inequitable competition on OPT agriculture are offset in various degrees by significantly lower labour costs in the OPT. Furthermore, prices in Israel are usually set at such high levels that OPT growers might still have a profit margin, despite their numerous handicaps.

(b) Volume of agricultural trade with Israel

There are no official data available on the total volume of OPT agricultural exports channelled into Israel across the green line. Unofficial and partial data, published by Israeli sources, reveals that the volume of fresh OPT fruits and vegetables exported to Israel is very small, in the range of 5,000 tons; for the Gaza Strip it was 1,415 tons in 1988/1989. 59/ In addition, the Israeli food processing industry procures from the Gaza Strip as much as 40,000 tons of citrus annually, used by juice factories, and around 1,500 tons of grapes from the West Bank, used in the wine industry.

The adverse impact of Israel's policies on trade with the occupied territory is reflected in the balance of trade between the two sides. Table 6-2 shows that there has been a steady and fairly large surplus accumulating in Israel's favour throughout the occupation period. The surplus rose markedly during the 1980s, reaching $84 million in 1986. It may have actually risen to approximately $100 million when accounting for Israeli agricultural exports to east Jerusalem.

Data on the quantity of fruit and vegetables traded between the OPT and Israel are available only for imports by the former from the latter. The OPT exports to Israel are estimated in table 6-2 by extrapolating on the basis of balance of trade and price index data. For example, the quantity exported in 1986 is equal to 31 divided by 114 and multiplied by 92, which is equivalent to 25,000 tons.

Notwithstanding the shortcomings in data estimates of OPT exports to Israel, it is still safe to conclude that the occupied Palestinian territory suffers a chronic deficit in its agricultural trade with Israel, probably in the range of 40,000 to 70,000 tons. This deficit rose steadily during the 1980s, reaching 67,000 tons of fruit and vegetables in 1987, with a value estimated at $84 million.

The data in table 6-2 indicate also that the quantity of imports from Israel was relatively stable during 1977-1986, ranging from 75,000 to 100,000 tons. This is attributed largely to the fact that OPT markets have become a steady outlet for a fairly well specified quantity of Israeli produce, both in regard to kind of produce and approximate volume. Conversely, the volume of exports from OPT to Israel fluctuated widely as a direct result of the selective policy of Israeli marketing institutions, whereby imports from the OPT play a buffer role in Israeli agricultural trade, intended only to supplement occasional deficits and stabilize prices. This delicate process is carefully coordinated by a number of Israeli officers working in OPT departments of agriculture, and acting upon instructions from the relevant Marketing Boards in Israel.

(c) Israeli trade policies after the intifada

The previously described conditions of trade between Israel and the occupied territory depicts largely the situation as it prevailed until the outbreak of the Palestinian uprising in December 1987. Despite apparent inequality, it is important to note that the actual implementation of Israeli policies relative to trade with the OPT was characterized until then by a relatively relaxed attitude, hence permitting a marked degree of "illegal" entry of OPT produce across the green line.

It is commonly believed by many Palestinian and Israeli trade experts that the volume of OPT exports to Israel was considerably greater than that reported in official data. Some Israeli officials go so far as to estimate that 40 per cent of all fresh agricultural produce sold in Israel during the late 1980s came from the occupied territory. 60/ Although many local experts and commission agents feel that this estimate is probably biased upwards, they do agree that Israel has indeed evolved as the major export market for OPT surplus farm produce, especially in the wake of sharply reduced exports to Jordan.

Massive infiltration of OPT produce across the green line proceeded up until early 1989, when the Israeli authorities tightened their restrictions. In 1989, more than 5,000 vehicles carrying 15,000 tons of Palestinian produce were seized inside the green line. During the first five months of 1990, 1,835 vehicles were confiscated. 61/

The entire trading relations between Israel and the OPT, however, witnessed a sharp transformation as of the summer of 1990. The Israeli marketing boards and Ministry of Agriculture officials have triggered a campaign aimed at halting the "illegal" entry of OPT farm produce to Israel, arguing that Palestinian growers in the occupied territory enjoy unfair competitive advantages arising from cheap labour. In order to force police authorities and other related Israeli bodies into taking a tougher stand, Israeli settlers lodged a suit at the Supreme Court demanding a stronger approach in implementing restrictions on OPT exports to Israel. Irrespective of the outcome of this legal showdown, the Israeli authorities have strengthened the ban imposed on OPT farm produce destined for Israel while their own exports to the territory continue to enjoy unrestricted privileges. The consequences of these policies may prove disastrous, especially for certain branches of intensive farming.

2. Trade with and across Jordan

(a) Factors affecting trade with Jordan and traditional markets

The regulations relevant to the flow of OPT farm produce into Jordan, and hence to other Arab countries, were entrusted in principle to the Arab Boycott Office, an affiliate of the Arab League. In practice, however, individual Arab countries have always managed to guide the said Office in ways which also meet their own interests.

Regulations and policies promulgated by Arab Governments relevant to agricultural trade with the occupied Palestinian territory have passed through numerous stages since June 1967. The gist of these regulations, until the mid-1980s, was the following:

1. No Israeli produce was to be permitted entry across the bridges. The local origin of produce had therefore to be certified by authorized officials.

2. A maximum of 50 per cent of the West Bank's farm produce was permitted entry. The rest was left for local consumption.

3. Gaza citrus was permitted entry, but mainly in transit to markets outside Jordan. Small quantities of dates and guavas were also permitted. Vegetables were not allowed, on the premise that the Strip had no problematic surpluses.

4. Estimates of yield for the purpose of issuing permits were delegated to authorized liaison officers who had to consult with marketing authorities in Jordan. Yield estimates were set, in general, at no more than 50-70 per cent of actual figures.

5. The number of lorries permitted to cross into Jordan was limited to around 400 for the West Bank and 100 for the Gaza Strip.

These regulations did not have a noticeably adverse effect on OPT agricultural exports to Jordan and neighbouring Arab countries during the 1970s and early 1980s. Neighbouring regional markets (as far away as the Islamic Republic of Iran and Iraq) suffered until then from such acute shortages in domestic supply that they implemented relaxed trade regulations relative to OPT produce. This attitude helped expand exports from the occupied Palestinian territory far beyond the pre-occupation levels. The quantity of citrus channelled from the OPT across the bridges during 1976-1977 amounted to 207,000 tons, while that of vegetables and melons amounted to approximately 100,000 tons in 1979. 62/

OPT agricultural exports across the bridges began to suffer adverse developments as of 1980. An important turning point in this regard was the outbreak of the Iran-Iraq war in 1979, which caused a sudden and total closure of the Iranian market to OPT farm produce. This dealt a severe blow to

Palestinian citrus exporters, who formerly sold around 50 per cent of their total exports in those markets. 63/ Furthermore, the quantities of OPT citrus (and vegetables) absorbed by the Iraqi market decreased markedly owing to the decline in consumers' disposable income.

The flow of OPT farm produce across the bridges dropped further as of mid-1980, as a consequence of pronounced expansion in local production in most neighbouring Arab countries. This pattern of growth was most clear in Jordan. Jordan's total output of vegetables increased during 1985-1988 by 85 per cent over the 1973-1975 average (see table 6-3). The rate of increase was higher for fruit (188 per cent) and olives (90 per cent). This increase was made possible by expanding the area under irrigation and achieving marked improvements in productivity. Both of these developments resulted from vigorous support services to producers, especially in the areas of credit, agricultural extension and provision of irrigation water.

Expanded domestic output in Jordan, on the one hand, and reduced export potential to neighbouring countries, on the other, have prompted the Jordanian authorities to exert increasing control over the entry of produce from the occupied Palestinian territory. This stand was further reinforced following the disengagement policy declared by the Government of Jordan in August 1988. In practice, this was manifested in numerous ways, such as reducing permissible quantities to only those required occasionally to supplement domestic demand, and conditioning entry mostly to intervals when competition with local produce was minimal.

The flow of OPT farm produce to and through Jordan was subject to other depressive transformations during the 1980s. Palestinian producers and exporters suffered increasing comparative disadvantages in Jordanian markets. Their production cost levels were noticeably higher than those of Jordanian producers. For example, the cost of irrigation water and that of unskilled labour was higher, by about 12 and 3 times, respectively, than that in Jordan. Furthermore, OPT exporters had to cope with exorbitant trucking costs to Amman, which amounted on the average to JD 35 per ton. Last, but not least, some export products, such as West Bank Valencia oranges, were deteriorating in quality. Quality shortcomings were made worse by the very low level of auxiliary marketing services accorded to products. These disadvantages assumed greater significance as export markets were becoming more competitive and more quality-conscious.

OPT growers and exporters are also confronted with the anomalous situation whereby they have to operate under the perils of two legal currencies, both of which have undergone rapid changes in their exchange value. The early 1980s witnessed sharp falls in the value of the Israeli currency. Following the severe depreciation in the value of the Jordanian dinar against the Israeli shekel since early 1988, OPT growers have become less interested in selling their surplus produce in Jordanian markets, even when prices in those markets are deemed high by local Jordanian standards.

(b) Volume of exports to and across Jordan

The above transformations in the conditions of trade with Jordan have affected in a substantial way the volume of agricultural exports to Jordan and neighbouring Arab countries. This is clearly illustrated in table 6-4.

The major trends of change indicated in table 6-4 are the following:

(a) Agricultural exports remained at their high level of over 200,000 tons for most years until 1985. Exporting at those rates helped absorb practically all marketable surpluses. The volume of exports amounted in fact to approximately one third of all OPT agricultural produce. Despite the apparent positive consequences of this relationship, it had resulted in excessive dependency on Arab markets, and it has exposed OPT agriculture to unpredictable policies which were adopted unilaterally by recipient countries.

(b) Agricultural exports began to drop rapidly from 1986; by 1989 they amounted to only 19 per cent of the 1984 level. This drastic fall was a key factor behind the severe set-backs suffered by OPT agriculture during the previous three to five years.

(c) Measured against the initial quantities of exports during the early 1980s, the relative drop in exported agricultural produce was most significant in regard to vegetables (which declined during 1981 to 1989 by 97 per cent). In quantitative terms, the drop was most significant in citrus, where the quantity of exports decreased during the same period by 114,000 tons. Other fruit channelled to Jordan, such as guavas, bananas and grapes were only slightly affected.

(d) The bulk of OPT citrus, especially that from the Gaza Strip, transits to other Arab countries. OPT-produce disposed of in Jordanian markets is, in effect, limited at present to small quantities of vegetables and citrus occasionally required during seasonal deficits. Small quantities of non-citrus fruit are also admitted with little restrictions on quantities, because of their small size.

The rapidly declining volume of agricultural exports to Jordan and neighbouring Arab countries was instigated initially by protectionist regulations in those countries. However, the rapid fall in the flow of farm produce to Jordan and other Arab countries is underlain by other fundamental changes which pose long-term problems for OPT growers. It is now clear that Palestinian exporters have lost considerable competitiveness in their traditional export markets, both in terms of quality and price levels. The factors which have contributed to that loss are of a nature such that it is difficult to see how OPT growers can regain their previous place in those markets under the present circumstances, even if regulatory barriers on trade across the bridges were relaxed.

The emerging transformations in the conditions of agricultural exports to neighbouring Arab and Islamic markets have entailed some important changes in OPT production patterns. Vegetable production in the Jordan Valley has been substantially curtailed. Melon production in the Jenin district, which had evolved into a major branch by the mid-1980s, suffered a drastic decline. Owners of citrus orchards, both in the West Bank and Gaza Strip, display a growing trend towards eliminating orchards with low productivity. None the less, the adjustment process has not yet resulted in introducing new patterns suitable for Arab export markets. That is an area where some rigorous research is needed.

3. Agricultural exports to Western Europe

Palestinian growers and traders have had very little experience in channelling farm produce to Western European countries. First, they had enough export markets open to their relatively meagre surpluses that they had little interest in opening new markets. Secondly, their infrastructural facilities were far too weak to enable them to compete in markets as demanding in terms of quality as those of Western Europe. It should be remembered that citrus firms in the Gaza Strip had acquired extensive experience in Eastern European markets, but these markets were quite different from those in Western Europe.

(a) Exporting to Europe through Israeli firms

The first contacts between OPT growers and markets in Western Europe were initiated indirectly through subcontractual arrangements with AGREXCO and Israel's Citrus Marketing Board (CMB). The former is a national cooperative which has been granted a monopoly on vegetable exports from Israel; CMB is an institution which has a monopoly on Israeli citrus exports.

Agrexco and CMB established strong working relations with growers in the occupied Palestinian territory. Drawing on the coordination and support of the Departments of Agriculture in both the West Bank and Gaza Strip, Agrexco promoted new plantations specifically directed for export, such as onion seeds and medicinal herbs. They also purchased high-quality vegetables from farmers (mainly eggplant, squash and strawberries). The Citrus Board purchases some quantities of Gaza citrus from time to time.

The record of relations between OPT growers and Israeli exporting firms has been mixed. The main complaint voiced on the Palestinian side has been that their interests were viewed only as secondary to those of Israel's. This was most apparent in regard to prices paid to suppliers, rates of rejection, and to the quantity of produce contracted. Even in peak years, the volume of vegetables exported through Agrexco did not exceed 1,500 tons.

Notwithstanding the low amount of exports, OPT growers' experience with Israeli exporting firms has brought considerable benefits, first in terms of higher income on sales and, more importantly, by acquiring valuable experience in doing business with sophisticated markets. In addition to economic returns, however, the political implications of presenting an independent Palestinian identity in Europe was deemed no less important than purely monetary gains.

(b) Direct exports to Europe

The initiative of direct agricultural exports to Western Europe was the subject of hard negotiations between the EC Council, Israeli authorities and Palestinian representatives. On 7 December 1987, the EC Commission and Israel signed a joint statement which acknowledged Israel's consent to Palestinian exporters from the OPT granting, "free choice to negotiate and establish direct links with buyers in the EC market". 64/

In pursuance of this agreement, several trial shipments were made during the seasons of 1988/89 and 1989/90. During the first season, exports from the

West Bank were restricted to 90 tons of aubergines; 550 tons were shipped during the second season. 65/ Both shipments ended with substantial losses, but useful experience was acquired.

As in the West Bank, vegetable trial shipments from the Gaza Strip to Western Europe were likewise unremunerative. 66/ The situation was somewhat more promising in regard to citrus exports, despite some serious business problems encountered with importers of the first shipment (2,228 tons). In the 1989/90 season, citrus exports increased to 10,000 tons, and the returns were encouraging.

(c) Evaluation and prospects

The direct export initiative to EC countries was thoroughly evaluated by local and foreign experts in a specialized workshop organized by the Cooperative Development Project in June 1990. All participants agreed that direct exports to Europe have opened an important opportunity for farmers in the occupied Palestinian territory. There was also clear consensus among participants that exploiting such an opportunity will require far more groundwork than possible in the OPT at present. The workshop concluded by emphasizing that the components of an efficient export operation would depend, in the final analysis, on progress achieved along the following lines:

(a) Developing an efficient support infrastructure which can cater for the following functions:

- Establishing professional planning and management, with emphasis on coordination between related institutions.
- Improving grading and packing facilities.
- Introducing cooling facilities at an early stage after harvest, and then providing refrigerated transportation facilities.

(b) Providing a more efficient and expedient market information system. Palestinian exporters cannot rely on EC officials and institutions in soliciting basic information on market needs in EC countries, it being an important component of international trade practices. This function has to be undertaken by the Palestinians themselves.

(c) Ensuring consistency and high quality of exported goods. The highly refined quality standards of the European market will have to be respected.

(d) Diversification in the product mix is essential. Palestinian exporters have to scrutinize more carefully the potential for producing and exporting products which may not be in demand in the home market.

4. Exports to Eastern European countries

Many countries in Eastern Europe had been traditional markets for Gaza citrus since the early 1950s (as well as for pre-1948 Palestinian exports).

In 1976, Gaza exporters channelled 62,000 tons to them. 67/ The share of Eastern European markets accounted during 1973-1983 for around 24 per cent of the Strip's total citrus exports. 68/

These markets had never been viewed by Palestinian exporters as particularly lucrative or attractive. Trade was conducted in most cases on a barter basis. Settling of payments by barter may have been practical prior to June 1967, but it became increasingly problematic and less rewarding during the occupation years. Consequently, the quantity exported to those markets averaged only 10,000 tons during the seasons of 1989 and 1990, which represents only 7 per cent of total exports. 69/

Recent developments in Eastern Europe should provide a new incentive for Palestinian exporters, not only in regard to citrus but other agricultural and industrial goods as well. The experience acquired by Gazan firms in trade with those countries may prove of immense value in restructuring trade relations with both sides on new grounds.

D. Agro-industries

Agro-industries in the occupied Palestinian territory have not achieved pronounced rates of growth during the occupation period, either in terms of volume of output or in production techniques. This phenomenon has attracted considerable attention during the past few years because of the deep consequences of agro-industries for the production structure of farm produce and the OPT balance of trade, in addition to other spin-off effects on the economy.

According to a survey conducted in 1983, there were only 405 agro-industrial firms in the occupied Palestinian territory, i.e., around 10 per cent of the total number of industrial firms during that period (see table 6-5). The following is a brief description of all major industries at the end of 1990:

1. Olive presses

The olive oil pressing industry is by far the most important of all agro-industries. Table 6-5 shows that olive presses comprise around three-quarters of all agro-industrial firms in the OPT. A great number of modern presses were established during the past two decades, hence aggregate production capacity is probably greater than needed to cope with domestic output of olives. However, many experts believe that the geographic distribution of these plants is not consistent with the distribution of olive tree orchards. This deficiency has grave consequences for the profitability of the presses, and for efficiency of operation during peak production seasons. 70/

Another important observation in regard to the olive pressing industry relates to the quality of olive oil. There is deep concern among local experts that the present techniques of filling and handling olive oil are not adequately controlled to prevent or minimize quality hazards. In fact, there have been several cases of adulteration during the past 10 years, which tarnished the reputation of Palestinian olive oil. Improving the competitiveness of OPT oil in both domestic and export markets is, therefore, heavily contingent on taking vigorous steps to introduce rigorous quality standards in this industry.

2. Citrus packing plants

There were eight citrus packing plants in the Gaza Strip and one non-functional plant in the West Bank as of December 1990. The aggregate capacity of all Gaza plants was 1,200 tons per day (eight hours) when local quality criteria are applied. However, their production capacity was one third lower if European Community standards are applied. 71/ In general, the production capacity of existing plants in the Gaza Strip and their technological level was adequate to meet current and predicted needs. Because of fundamental differences in production and marketing patterns, it has not been possible to operate the only packing plant in the West Bank since its establishment in 1979.

3. Food processing firms

There were eight major food processing plants in the OPT, two in Hebron, two in Tulkarm, two in Jerusalem, one in Nablus, and one in Gaza. Four of these plants were engaged in producing tomato paste, hommus, foul (beans), falafel, and soups. Another three (one in Jerusalem and two in Tulkarm) processed meat. So far, all raw material used in the local processing industries, except for small quantities of lentils, were procured from Israeli or foreign sources. Despite the relative abundance of surplus citrus, there was still no citrus-based food industry in the occupied territory. Likewise, there were no full-fledged grape-based industries other than small quantities of traditional products processed using primitive techniques.

4. Olive pickling

An estimated 6,000 tons of olives are pickled each year. Around one third of this quantity is consumed in local markets and two thirds exported to neighbouring Arab countries. Despite being one of the most important agro-industries in the West Bank, olive pickling is still performed using traditional techniques. The quality of OPT olive pickles is noticeably non-uniform, and generally inferior to that of products imported from other competing countries.

5. Cigarettes

Two cigarette companies operated in the West Bank. Until 1987 they provided around 60 per cent of all domestic demand. The share of these firms in the local market has risen to around 70 per cent since the intifada. In the past a considerable amount of tobacco was purchased from local farmers but now nearly all the tobacco used by both firms is imported from foreign sources. Officials in both firms argue that the quality of locally produced tobacco is inferior to that of imported products and that prices are relatively high.

6. Dairy plants

The dairy industry was quite primitive and small in size until the mid-1980s. Milk from sheep and goats was processed by farmers themselves using primitive and often non-hygienic techniques. There were around 13 dairy firms in both territories, all engaged exclusively in the processing of cow milk.

The dairy industry expanded rapidly following the outbreak of the intifada and the subsequent embargo imposed on the consumption of Israeli dairy products. It should be noted, however, that the expansion has been restricted largely to cow milk-based processing. Sheep and goat milk dairying has scarcely changed in regard to production and marketing techniques in common use.

There were around 16 dairy plants in the occupied territory with a total production capacity of 50 tons a day. Actual production was estimated at only 17 tons per day. Despite capitalizing heavily on their identity as national industries, OPT dairy plants procure around 80 per cent of their milk supply in powder form from Israel.

The majority of dairy plants in the territory belonged to cooperative societies founded by procuring substantial grants from foreign funding sources. Nearly all of these firms were operating at a loss and were unable to compete with more established producers. This shed serious doubts on the future of the dairy industry should local markets be re-opened to competition, or if cooperative plants stopped receiving external aid.

Chapter VII

PROPOSALS FOR THE IMMEDIATE IMPROVEMENT OF THE AGRICULTURAL SECTOR

The purpose of this chapter is to identify those policies and measures which are needed to improve the agricultural sector "immediately", rather than those which might be envisaged within medium- or long-term scenarios. Such an assignment, however, involves difficult questions of definition. The measures and projects required to improve and develop agriculture in the occupied Palestinian territory are so intertwined that it will be extremely difficult to draw a demarcation line between those needed at the present (hence conceived of as "immediate") and those required at a later point in time.

A more appropriate approach, given existing circumstances, would be to view the vast majority of proposed measures and projects as extending along a continuous time spectrum which cannot be segmented into exclusive phases. The selection of appropriate projects and relevant implementation modalities along any point on this spectrum is contingent on overriding circumstances (economic, political and technological). In particular, the entire process of economic development in the West Bank and Gaza Strip will be heavily influenced, both in direction and magnitude, by the degree of sovereignty accorded to Palestinian residents in those territories.

The policies and project ideas presented in this chapter will have to be maintained even when planning for development in the medium- and long-term. For obvious pragmatic reasons, the project mix and the logistics of implementation advocated in this report are viewed under the realistic assumption of continued occupation. It will, therefore, be necessary to reconsider the choice of projects and appropriate implementation strategies once Palestinians gain sovereignty over their country, whether partial or total.

A. Strategic objectives of agricultural development

Defining the major objectives for the process of agricultural development in the occupied Palestinian territory is a dynamic process heavily contingent on many fundamental political, economic, and social assumptions. There is, therefore, a high probability that objectives proposed at a given point in time may be revised in the light of emerging transformations. In the present political and economic setting, the objectives of a Palestinian agricultural development strategy should be targeted to achieve the following:

- Generating the maximum number of employment opportunities. This certainly would have top priority. However, expansion of employment should not occur at the expense of the competitiveness of OPT growers.

- The thrust of the production process should be targeted to cater for domestic consumption needs. This is compatible with the cherished objective of reducing dependency of the territory on Israel, and would improve the trade balance. Expanding local production and food supply has great significance in the light of the anticipated growth of the OPT population and improvement in living standards.

- Maximizing the area of land under cultivation is perceived as another high priority for agricultural development, possibly more for political than economic reasons. It is important to note, however, that the potential for expansion is almost completely restricted to hilly land of marginal quality and non-viable productive capacity.

- Expanding the irrigated farming area is an essential prerequisite for achieving such basic targets as increasing employment capacity, raising income from agriculture, and improving the OPT balance of trade.

- Under the present setting of extreme competition in local and export markets, and given that Palestinians look forward to greater freedom in trade, OPT farmers should strive continuously to improve their competitiveness, both in regard to quality of produce, production costs and level of auxiliary marketing services.

- Parallel to all previous objectives, it is still important to sustain certain forms of peasant farming. This policy has complex social, political and even economic implications which go beyond market-oriented agricultural production.

B. Recommended policies and projects

1. Planning of agricultural development

Most local development experts and activists in the occupied Palestinian territory are of the opinion that economic planning in the conventional sense is not feasible. Any such planning process will remain heavily contingent on Israeli policies. While conventional planning may not be possible, nor even advisable at this stage, an alternative process of project identification and prioritization is certainly needed. In theory, there are several institutions involved in one or more aspects of the process of agricultural development. In practice, many local experts complain of duplication of coverage and competition which prevail among such institutions.

Efforts have been exerted during the past ten years in the direction of setting up a centralized agricultural body to be called the Higher Agricultural Council. However, the Israeli authorities have taken an unfavourable stand in regard to such efforts, and have blocked them on security grounds. Given this background, the following measures are suggested:

(a) Programming for agriculture in both the West Bank and Gaza Strip could be delegated to an inter-disciplinary committee based at the Agricultural Engineers Association (AEA) in each territory. The two committees would seek practical ways of coordination, and try to establish a central planning committee (or council), if permitted under the prevailing circumstances.

(b) The Programming Committee at the Agricultural Engineers Association in the West Bank could include a small number of leading farmers and representatives from related areas. For example, the following bodies could be represented: Economic Development Group, Agricultural Development and Credit Company, Agricultural Relief Committee, Technical Development Company, West Bank Agricultural Cooperative Union, Jericho Marketing Cooperative, United Agricultural Company and the Palestinian Hydrological Group. This list excludes development organizations with foreign affiliation.

(c) A similar parallel committee could be set up in the Gaza Strip, again based at the Agricultural Engineers Association. In addition to some leading farmers and representatives from some of the above-mentioned institutions, the Gaza Committee could also include representatives from local agricultural bodies, such as: Citrus Growers Union, Beit Lahya Cooperative, Deir El-Balah Cooperative, Khan Younis Cooperative, and the Fishermen's Cooperative.

(d) The two Agricultural Programming Committees could assume, to the extent possible, a professional approach in performing their functions. This means, among other things, that they have to stay clear of factional disputes or needless confrontations with Israeli authorities. The presence of a full-time adviser on agricultural planning sponsored by the FAO may prove helpful in facilitating the efficient functioning of the proposed committees.

(e) The role of local agricultural institutions which have mushroomed in the wake of the intifada poses serious problems and complications, both at present and in the future. In the face of criticism that the Departments of Agriculture in the OPT are not performing optimally at the present, each one of these institutions has undertaken to build its own research and extension facilities. While some results have been accomplished, this has come at a noticeably high cost. Furthermore, there has been a pronounced degree of competition and duplication between various feuding institutions.

(f) The factional agricultural institutions should be incorporated into a national entity responsible for agriculture. Until then, a great deal can be done. The following are some suggestions:

(i) The Agricultural Programming Committee (APC) in each territory could foster greater cooperation among agricultural bodies. This role would be effectively augmented if APC succeeded in soliciting vigorous political support and commitment to adopt a professional and non-factional approach to agricultural development. Owing to the deep rift on development issues among Palestinian groups in the territory, it is urged that the question of local "development" institutions be discussed and regulated by an existing Palestinian central authority.

(ii) An important reason for the proliferation of development institutions lies in the ease with which those institutions have succeeded in raising funds from various NGOs and Governments. While it is practically impossible to impose guiding constraints on the relations between local institutions and external funding sources, considerable efforts could be exerted to avoid factional allocation of aid. The role of the Agricultural Programming Committees and the Credit Steering Committee could be instrumental for this purpose.

2. Credit

The lack of sectoral credit facilities has been one of the most restrictive constraints on agricultural development during the 25 years of occupation. The efforts of local non-profit credit institutions which have emerged during the past three years have been so far of an educational nature. The role of foreign NGOs in the area of financing agriculture has also been weak and often counter-productive.

(a) The present political and administrative setting in the region may not permit the establishment of a full-fledged credit institution, like the Agricultural Credit Corporation in Amman. However, it would be possible to channel funds for that purpose through existing local institutions. The strong financial and political support which these institutions receive from the European Community and several other Governments and international organizations makes them less vulnerable to the harassment of occupation authorities.

(b) The funding available for local credit institutions could be substantially expanded by drawing on new sources which are not necessarily of a philanthropic nature. Among the more important sources to be attempted will be the following: World Bank, IFAD, European Investment Bank, Arab Fund for Economic and Social Development, Islamic Development Bank and others. One of the main reasons for not being able to solicit funding is that most of these institutions operate only through Governments in recipient countries. The OPT could launch a vigorous legal campaign aimed at obtaining exceptional treatment.

(c) Coordination between local credit institutions should be promoted effectively by resorting to institutional channels and not through sporadic waves of euphoria. It is proposed that all five major institutions with credit activities, namely, Economic Development Group, Agricultural Credit and Development Company, Technical Development Company, Cooperation for Development, and United Agricultural Company agree to set up a central Credit-steering Committee consisting of two or three board members from each institution.

(d) The Credit-steering Committee could be entrusted with such vital functions as coordinating fund-raising efforts, defining objectives and priorities, setting the rules and criteria of operation, and establishing some form of division of labour, whether on a sectoral or regional basis. Coordination between credit institutions will help reduce overhead expenses and improve their loan re-collection record.

(e) As there is no legal barrier for channelling investment funds, whether in the form of joint ventures or loans, rich Palestinian individuals and firms in the diaspora could be encouraged to channel part of their investment portfolio to the West Bank and Gaza Strip. Local credit institutions and the Cairo-Amman Bank can play an important catalytic role in this regard.

(f) Private voluntary organizations (PVOs) and other non-governmental organizations (NGOs) can still play a useful funding role. These institutions are urged to allocate more of their resources for agricultural projects, and to stop advancing grants, except when the projects are of a communal nature. The bulk of their aid to agriculture should be channelled as loans, preferably through or in collaboration with local credit institutions.

3. Education and research

The present status of agricultural research and education services is full of gaps, despite remarkable achievements in productivity and technology transfer during the earlier part of the occupation period. Providing these services more efficiently requires action along the following lines:

(a) The technical staff at the departments of agriculture in the West Bank and the Gaza Strip have played an integral role in accelerating technological change in agriculture. However, the field staff of both departments, who are all Palestinian residents, have had very little access to advanced formal training during the past two decades, presumably because of Israeli budgetary constraints. On the other hand, those NGOs which provide the kinds of training needed are opposed in principle to sponsoring technicians working in government bodies, on the assumption that this should be an Israeli obligation.

(b) While Palestinian development experts essentially agree with the argument of not providing NGO funding to governmental institutions, they are willing to see NGOs take a less rigid stand on this issue. One prominent example is providing training for some OPT extension staff.

(c) Assisting alternative local institutions in building up their own extension staff should be viewed with serious reservations. On the basis of a similar experience in the field of health, establishing alternative extension staff inevitably leads to duplication, competition and a substantial amount of waste. In the few cases where additional technicians are needed, the decision on how many to recruit, and their expertise, should be delegated to the Agricultural Programming Committees. In this case, additional extension staff are to be affiliated to regional cooperative societies.

(d) More intensive research and vocational training efforts should be targeted to solving production problems relating to hilly forms of agriculture. The research should be addressed at providing satisfactory answers to a great number of problems. The following are prominent examples:

- Identifying the appropriate and most remunerative patterns of production.

- Exploring prospects for reducing the cost of ploughing in hilly orchards by wider and more effective dissemination of weed killers. In some areas this objective could be achieved by the introduction of small tractors adapted to hilly areas.

- One of the major factors bearing on the future of the olive sector is the prospect of revolutionizing the picking of fruits, since the cost of hand-picking absorbs one-third of the entire crop value.

The introduction of an alternative picking technique may induce substantial improvement in the economics of olive production.

- Developing the quality of free range pastures on marginal land would give a vigorous boost to traditional patterns of sheep raising (see recommendation no. 9.1). Much applied research is needed for this purpose.

(e) Previous efforts aimed at establishing one or more colleges of agriculture should be urgently re-examined. OPT experts are of the opinion that such a college should depart from the model of conventional colleges common in the region, which have left hardly any impact on agriculture in neighbouring Arab countries. For logistical reasons, the preferred location for such a college could be at An-Najah University in Nablus. Governmental and non-governmental organizations can provide significant support to the proposed project.

(f) The agricultural institutes at Tulkarm (Khadourie) and at Arroub (Hebron district) need to be vigorously reactivated for a greater focus on agricultural education and training. The fact that each one of these institutes is endowed with adequate physical infrastructure (buildings, farm land, and experienced faculty) should make this task relatively easy. It should be possible to convince the Israeli authorities to accept and even contribute to the reactivation of both institutes. Strong governmental and non-governmental support is needed for this purpose.

4. Land

Expanding the area of land under active cultivation is currently impeded by regulatory obstacles, i.e., those relating to Israeli land encroachment policies, and by significant economic and technical barriers. In addition to legal and political pressure against such measures, an expansionary land-use policy could be accelerated by resorting to numerous facilitative measures. The following is a list of prominent examples:

(a) The main category of land where significant expansion is possible is that of West Bank hills. Rendering farming feasible on such low-quality land is contingent on taking a number of measures:

1. Opening agricultural roads is deemed as a high priority. This process is regarded as a vital prerequisite to connecting farm land, especially that in remote locations, with roads of a quality that would permit easy year-round access to farm machinery and small lorries.

2. Rendering rocky and excessively sloped land fit for cultivation should be preceded by an acceptable level of rock clearing and building of terraces. For economic considerations, however, land development works could be kept to a minimum. In particular, it is important to note that full-scale terracing and land reclamation is not necessary for growing olives and almonds, as the cost of this process is far higher than warranted by expected returns.

3. A primary component of a land reclamation scheme in hilly areas is the drilling or repair of rainwater collection cisterns (each holding around 25 cubic metres). These cisterns serve such vital purposes as providing irrigation water for tree seedlings, furnishing livestock with drinking water, and most importantly, providing water needed for the spraying of insecticides and weed killers.

(b) Excessive fragmentation of agricultural land should be discouraged. Much could be done to dissuade heirs from irrational modes of land division, even before the inception of a central authority in the OPT.

5. Water

Irrigated agriculture is envisaged as the backbone of agriculture in the West Bank and the Gaza Strip. Given the limited supply of irrigation water available to Palestinian farmers, the main thrust of a national water policy should be targeted at maximizing the efficiency of irrigation water and spreading available supply over the largest cultivated area. Parallel to these measures, every effort should be exerted in order to restore the Palestinians' fair share of usable water reserves in the region. The following are some project ideas which would help achieve the above-mentioned objectives.

(a) Introducing drip irrigation techniques on citrus orchards is a high priority, especially as this pattern of farming consumes around 52 per cent of all irrigation water in the OPT. With only about one-third of citrus groves in the OPT irrigated by modern techniques, the wider dissemination of those techniques will help save around 16 to 20 million cubic metres of water a year. In addition to reducing production costs, the quantity of water saved should be used in expanding irrigated land area. The success of this project is contingent on the effective demonstration of the recommended techniques, and on providing credit facilities for those farmers who need it.

(b) The productive capacity of artesian wells is low, and it is getting weaker in the course of time. The main reason for this is the lack of adequate funding sources for the purpose of implementing necessary renovations. Reversing this trend requires taking the following measures:

(i) Providing needy and eligible well owners with loans for the purpose of cleaning and deepening their wells. This has become a high priority for many wells because of accumulations of sand and silt.

(ii) Owners of some artesian wells should be encouraged to connect their wells to neighbouring electricity grids. This process should be initiated on a selective scale and after conducting a careful economic and technical evaluation for each well.

(iii) The modernization of wells may involve deserting the old diesel engines, most of which are over 20 years old, and replacing them with turbine heads. In this case, the vertical pumps will have to be replaced by submersible horizontal pumps connected to the nearest regional electricity grid. The cost outlay necessary for introducing the suggested changes is estimated at around $40,000 per well. The overhead costs will be easily recovered in the form of much higher discharge capacity and lower cost of irrigation water. The main reason that this process has not been practised on a wider scale is that very few well owners can provide the capital requirements from their own equity. In addition, the Israeli authorities are sometimes reluctant to permit access to the Israeli electric grid.

(iv) There are several Palestinians in both territories who have been granted permits to drill new wells as a replacement for wells which have been closed for various reasons (dry, caving in, mechanical damage, etc). There have been around 25 such licences issued to private individuals in the West Bank since June 1967. Some of those who procured licences were able to drill new wells, and managed to equip them with modern installations. Several others, on the other hand, were obliged not to drill the needed wells, because of the enormous cost ($700-1,000 per metre). Some who did drill were unable to equip their wells with the recommended facilities (e.g. access to the electric grid, installing submersible pumps, and renewing distribution pipes).

(c) The disbursement and management of funds allocated for artesian wells and other water projects could be delegated to local credit institutions, but the decisions on projects to be funded and the scale of funding have to be taken by the Agricultural Programming Committees.

(d) The Israeli authorities are becoming increasingly sensitive in relation to the question of water, and it is possible that they may resort to imposing tighter restrictions on water use in the territory. Consequently, it is imperative that Israeli water policies bearing on the Occupied Territories be placed under constant scrutiny. Injustices relevant to allocation of common resources and other emerging water disputes should be referred to and reconciled by impartial international organizations.

6. Agricultural trade

Palestinian growers (and industrialists) look forward to the liberalization of trade in the region, especially with their immediate trading partners. The recent escalation in protectionist policies being introduced by the territory's immediate trading partners have greatly undermined agricultural development in the occupied Palestinian territory.

Adjustments in trading terms may have to evolve gradually until they are ultimately negotiated freely and equitably between a sovereign Palestinian entity and its trading partners. The following is a list of the required adjustments:

(a) The conditions of agricultural trade between Israel and OPT are becoming the source of mounting bitterness on both sides, especially in view of the vested interests in this conflict on both sides. It is practically impossible to prescribe any set of measures acceptable at face value by both

Palestinians and Israelis. Yet, it is noticeable that most Palestinians and a great many Israelis agree, at least in principle, that there is a lot to be gained by liberalizing trade across the green line.

(b) Negotiations on agricultural trade are often complex, even when involving friendly neighbours. The principal recommendation in this regard is to encourage Israeli trading authorities and relevant OPT institutions to negotiate their trade relations on an equitable basis, in the interest of both sides. Given the inherited mistrust and mounting bitterness on both sides, Israeli-Palestinian negotiations on trade should be initiated and supervised by the relevant specialized international bodies.

(c) Bilateral negotiations on trade may sound too premature to be listed under the category of recommendations for "immediate revival". None the less, such a step remains as a top priority to be attempted in a serious and determined way as soon as possible. The precedent of getting Israel to agree on direct exports to EC markets sets an example to follow. However, the process can be facilitated and expedited only if it is clearly emphasized that equitable terms of trade will not jeopardize the legitimate interests of any side, nor conceived as means for scoring political points.

(d) The OPT trading relations with Jordan and other neighbouring Arab countries also present difficulties. In addition to short-term protectionist motives and political barriers, and given the present structure of agriculture in the occupied territory, there exists a decreasing degree of complementarity between OPT agriculture and Arab trading partners. The OPT growers should identify and attempt to seek comparative advantages relating to the kind and quality of products they can channel to Arab markets.

(e) Notwithstanding overriding obstacles relating to weakened competitiveness of OPT producers in Jordan and neighbouring Arab markets, trade between both sides is impeded further by the fluid and unpredictable nature of relevant regulations and policies. The main source of problems in this regard is that those policies are envisaged and implemented unilaterally, at times with no consultation with OPT representatives.

(f) It is strongly recommended that trading relations between the occupied territory, on one side, and Jordan and other Arab countries, on the other, be structured by joint teams and on business grounds. Such negotiations may be conducted under the aegis of the Arab League, and should not result in only vague promises of solidarity.

(g) A great deal can be done to take fuller advantage of the trade potential which Palestinians could cultivate with Western and Eastern European countries. Most of the measures needed for this purpose fall in the area of infrastructural and auxiliary marketing services, and they will be dealt with below. The OPT export institutions will need to work hard at transforming the atmosphere of solidarity with EC countries into concrete protocols.

(h) Another useful aspect of the EC role relates to Israel's policies bearing on OPT trade. On previous experience, it is imperative that the EC keep monitoring those policies and take action when needed.

(i) The markets in East European countries may provide OPT producers with a lucrative opportunity. Some experience in those markets was acquired in the past, but in a very different economic and political setting. It is recommended that a new assessment of those markets be conducted in the light of recent transformations in Eastern Europe. With the mounting international interest in those markets, it is urgent that a team of OPT agricultural experts and representatives of chambers of commerce and industry be dispatched to Eastern Europe for the purpose of exploring trading prospects.

(j) The Free Trade Agreement concluded between Israel and the United States has given the former preferential benefits which are denied to OPT producers and manufacturers. It is well known, though, that some of the Israeli goods destined for United States markets are manufactured partly or wholly in the occupied territory, but bear a label of Israeli origin. The United States Government could put an end to this anomaly by granting the Palestinians in the West Bank and the Gaza Strip a similar independent status to that enjoyed by Israeli exporters.

7. Infrastructure and auxiliary services

Attaining a competitive standing in local and export markets is not only a function of fair terms of trade, since the crucial question is whether OPT products are of the desired quality and offered at the right price. There was a time when shortages in domestic and export markets permitted OPT growers to sell their surpluses without having to worry about their competitiveness. In fact, that relaxed setting may have deprived OPT growers and exporters of the compulsion to keep improving on the quality of their produce and cost-consciousness. As a consequence, OPT growers are now lagging behind many of their competitors, especially in their most important markets, Jordan and Israel. Furthermore, the level of their competitiveness will play a decisive role in their prospects for making significant use of the opportunities open to them at present in Europe.

Improving the quality of produce and minimizing production and marketing costs is dependent on numerous developments, some of which were mentioned earlier (upgrading research and extension services, and expanding credit facilities, for example). Other effective developments include the following:

(a) More serious attention should be devoted to creating quality consciousness in the farming community. Producers should be trained in proper sorting and packing techniques, and they should refrain from topping their boxes with the better quality produce. The introduction of practical (probably mobile) grading equipment is necessary in some cases, especially when the produce is destined for high-quality markets. However, the introduction of very sophisticated grading machines may not meet the real current needs of producers in the occupied territory.

(b) The extensive use of wooden boxes in handling farm products constitutes an important barrier to more efficient marketing. There is an urgent need for revolutionizing the packaging of farm products, just as in Israel and Jordan. Cardboard and styrofoam containers have to be designed in accordance with specifications recommended for various products. The presence of modern plastics factories in the territory should provide adequate flexibility to cater for the needs of growers and exporters. A cardboard factory is under construction in Nablus, and it is hoped that this factory will meet the needs of farmers in the region.

(c) Cooling facilities have to be provided when produce is destined for export markets. Pre-cooling facilities should be installed in strategic locations where products are stored until they are transported to seaports or airports. Perishable products have to be transported in refrigerated containers. This is particularly important in the case of grapes, strawberries, apricots, figs, peaches, and soft vegetables.

(d) Low quality standards and inadequate control regulations are particularly menacing in the case of dairy products. The situation has worsened during the past three years as a consequence of the proliferation of small dairy plants without adequately trained technicians. The problem is further compounded by the somewhat relaxed attitude taken in this connection by local health authorities. The Departments of Public Health and Veterinary Services in the West Bank and the Gaza Strip should be permitted, if not urged, to play a more active role in supervising dairy plants and enforcing safe quality standards. Any undermining of the role of those institutions on account of their governmental affiliation could entail disastrous consequences.

(e) Modernizing auxiliary marketing services requires capital and technological resources beyond those available to local producers or institutions. Within the frame of a "marketing centre" equipped to perform the required services on behalf of farmers or traders, it is recommended to establish a research facility which would provide its services to those who have a vested interest in introducing the recommended innovations, such as growers, commission agents, wholesalers and the staff of cooperatives. The following is a list of the main services to be performed by such a facility:

- Conducting market research on prices and the supply and demand outlook, and disseminating the information to interested beneficiaries.

- Conducting demonstrations and training activities on modern marketing techniques.

- Providing technical advice and consultancies to firms involved in various aspects of the marketing system.

(f) The proposed marketing or trade promotion centre could be sponsored by the International Trade Centre and UNCTAD with UNDP financing. The proposed centre should have a board of directors representing, in addition to its United Nations sponsors, the two Agricultural Programming Committees, the Agricultural Cooperative Union, and representatives of farmers and traders. The project proposal for this centre should be followed up by UNDP for implementation as early as possible.

8. Diversification of cropping patterns

The high rate of growth in agricultural income and rapid increase in productivity during the past 25 years have not been accompanied by significant changes in cropping patterns. Such changes were not deemed necessary during the earlier years of the occupation period. However, the situation has now changed in a very substantial way, and unless important restructuring in farming patterns is introduced, OPT agriculture will suffer. Changes could lead in the following directions:

(a) New products should be grown in the context of a vigorous import substitution policy. This includes a fairly wide range of products, such as: persimmons, avocados, dates, early grapes, turkey meat, cheddar cheese, and pasteurized milk.

(b) Export policies should focus on high-value products. "New" export-oriented products may include some or all the following: flowers, strawberries, cantaloups, celery, asparagus, pharmaceutical herbs, onion seeds, etc.

(c) Growing field crops for local consumption (e.g. wheat, legumes) may offer great potential, especially since acute deficits occur at present. As the productivity and profitability of field crop farming have not improved at adequate rates this branch has not been expanding. This may change markedly upon the implementation of vigorous research and extension service policies.

(d) Fodder crop production is another type of farming worth introducing after conducting a satisfactory economic and technical evaluation.

9. Livestock

Livestock branches have achieved considerable growth from 1987 to 1990. However, many experts were apprehensive that the growth achieved was due more to protection resulting from the embargo imposed on the import and consumption of Israeli products than to any genuine improvement in productivity.

The livestock sector will benefit in various degrees from most of the proposals outlined elsewhere in this chapter. The following are specific recommendations which may have significant bearing on the future of this sector:

(a) Natural pastures should receive considerable attention. It is proposed that some demonstrations on pasture development and conservation be initiated and promoted in a number of appropriate locations. Much of the required expertise could be drawn from the ICARDA centre in Allepo. A project of this nature could be sponsored by UNDP, which can draw on the technical expertise of other United Nations organs.

(b) The cultivation of forage crops on irrigated land, using efficient irrigation techniques may prove to be a profitable line of farming. At the same time, it will help provide a vital feed input. Nearly all high quality fodder (alfalfa or vetch bales) is now procured from Israel.

(c) The promotion of commercial fodder production could be introduced initially by arranging for a number of demonstration plots. Depending on the outcome of those demonstrations, forage production could be promoted vigorously by providing farmers with technical advice and funding facilities. Local credit institutions and cooperative societies could play a major role in implementing this programme.

(d) Local factories account for about 20 per cent of the livestock feed sold in local markets, although their production capacity would allow them to satisfy all domestic demand. Obtaining a greater share of the local feed market requires maintaining higher quality standards and offering feed at more competitive prices. The following measures may be helpful for that purpose:

(i) All local feed-mills should subscribe to a quality control programme to be based at a local university. It is proposed that this service be delegated to the agricultural laboratory which is currently being established at An-Najah University in Nablus.

(ii) Owners of feed-mills should be provided with sufficient credit to modernize their machinery and expand their storage capacity. Collective purchasing of raw materials will help to reduce cost of purchased inputs.

(e) The main bottleneck impeding more rapid growth in the poultry industry is the lack of a local hatchery. UNDP and ANERA could play a vital role in implementing this project, by providing funding or the necessary political support, should that be necessary.

(f) Given the present and foreseeable demand for fish and the price structure in local markets, fish culture in ponds is likely to be one of the important branches of livestock farming in the territory. Like some other suggested innovations, fish culture could be promoted by providing a service package incorporating research, extension instruction, credit, and improved marketing facilities.

10. Subsidy components

While every effort should be made to develop OPT agriculture on the grounds of its real economic viability, certain forms of subsidy to agriculture are unavoidable. The fact that most other countries in the region adopt an overly paternalistic attitude to their farming sectors makes it imperative that Palestinians structure their own subsidy schemes, but with great care. The following are prominent examples:

(a) Expansion in cultivated land area can only be implemented by reclaiming land of marginal quality, since practically all land of better quality is already under cultivation. However, commercial farming on land of inferior quality is of low profitability, and it may become less viable if owners are obliged to invest heavily in reclamation operations. Since the real returns on this process are more of a long-term national interest rather than purely for monetary gains, it is therefore strongly recommended that land reclamation costs be subsidized at a level which would induce owners to undertake this "obligation".

(b) Subsidization of land reclamation schemes can be feasibly implemented through agricultural cooperatives, many of which already own the required machinery. Cooperatives can transfer any subsidy earmarked for this purpose by lowering the cost of their land reclamation services, and by helping to open access roads to reclaimed land.

(c) The other major question in regard to subsidy is that relating to irrigated farming, which in effect constitutes the backbone of commercial agriculture in both the West Bank and the Gaza Strip. Very few experts would advocate a permanent subsidy scheme for major OPT market-oriented patterns of agriculture, since this will become increasingly less viable in an age of freer foreign trade. However, until OPT trading relations with Israel and Jordan are negotiated on equitable grounds, some form of subsidy to Palestinian agriculture is imperative.

(d) In the absence of a national authority, one effective way to deliver subsidy to OPT farmers is by lowering the cost of irrigation water. Aid could be channelled first to owners of wells in proportion to the quantity of water they discharge (all wells are metered), on condition that they lower prices of water by a certain ratio. The implementation of this project could be undertaken by regional marketing cooperatives, and under the supervision of the Agricultural Programming Committees.

(e) A third form of subsidy is that of providing insurance against damage caused by frost and other severe climatic variations. Severe damage is inflicted at the rate of nearly once every two years; it sometimes reaches disaster levels (in 1986/1987 the damage suffered by West Bank farmers was estimated at about $30 million). Israeli and Jordanian farmers are compensated for such damage in different ways, whereas their Palestinian competitors have no such benefits.

(f) It is proposed that an insurance scheme be set up whereby participating farmers would pay modest premiums into a national insurance fund. Supplemental contributions should be raised from NGOs and other sources interested in supporting OPT agriculture. This project could be implemented by local credit institutions, under the supervision of the Credit Steering Committee.

11. Cooperatives

In the absence of a sovereign national authority, cooperative societies should be conceived of as an important option for the revival of the OPT production base. As such, every effort should be made to help expand and upgrade the services they render to farmers in various sectors.

(a) Due to profound constraints, it is unlikely that regional cooperatives will be able to provide real marketing or lending services to their members. Nevertheless, cooperatives could play a useful role as intermediaries between their members and other specialized credit and marketing institutions.

(b) By virtue of their district-based mandate, regional cooperatives could undertake certain agricultural services of a collective nature, such as land reclamation and pest control campaigns. More importantly, regional cooperatives could play a very helpful role in providing extension education to farmers and in lobbying for the interests of the farming community, both inside and outside the occupied territory.

(c) In order to meet the apparent needs for educational and research activities, and in order to disseminate an understanding of cooperative ideals, it is recommended that an educational centre be established specifically for such purposes. It may be possible to set up the proposed project within the Cooperative Development Project now being sponsored by the Agency for International Development (AID).

(d) The functioning of cooperatives should be carefully scrutinized in the light of cooperative principles and ideologies. Any politicization of cooperatives should be strenuously avoided. The exploitation of cooperatives as power bases by local leaders should not be tolerated. Elections for management boards should be regularly held, as stipulated in their bylaws, and members should be thoroughly educated regarding their rights and obligations.

Notes

1/ For a comprehensive exposition of the means employed in the quest for land in Palestine during the mandate period, reference is made to Kenneth Stein, The Land Question in Palestine 1912-1939 (Chapel Hill, University of North Carolina Press, 1984).

2/ Anan Ameri, Palestinian Agricultural and Industrial Development 1900-1970, (Jerusalem, Salah-Eddin Press, 1981) p. 20 (in Arabic).

3/ Ibid., p. 35.

4/ Jordan's External Trade Statistics, quoted from Jamil Hilal. The industrial and economic structure of the West Bank 1948-1974, (Beirut, Palestine Research Centre, 1974) p. 118 (in Arabic).

5/ A. Ameri, op. cit., pp. 56-57.

6/ Ibid.

7/ Israel, Ministry of Defense, Administered Areas Census of Population, 1967, Vol. 2, p. XII.

8/ Computed from Israel, CBS, Judas, Samaria and Gaza Area Statistics, (Jerusalem, CBS, 1986) No. 3, pp. 78-89.

9/ Israel, CBS, Statistical Abstract of Israel, (Jerusalem, CBS, 1988) p. 705.

10/ Israel, CBS, Agricultural Statistics Quarterly, (Jerusalem, CBS, 1989).

11/ Israel, CBS, Statistical Abstract of Israel, 1988, op. cit., p. 311.

12/ Israel, CBS, Agricultural Statistics Quarterly, 1989, op. cit.

13/ Ibid.

14/ H. Awartani, Grape Production in the West Bank - An Analytical Outlook, (Nablus, An-Najah University, 1984) pp. 19-29.

15/ H. Awartani, Construction or destruction? Ramifications of the West Bank Road Scheme no. 50 (Nablus, An-Najah University, 1985) p. 5.

16/ M. Rajab, The Agricultural Situation in the Gaza Strip (Jerusalem, The Arab Thought Forum, 1991) p. 2 (in Arabic).

17/ Sarah Roy, The Gaza Strip Survey (Jerusalem, West Bank Data Base Project, 1986) p. 139.

18/ Unpublished report submitted by UNRWA to the Secretary-General of the United Nations, "Socio-economic conditions in the occupied territory", 1991.

19/ Calculated from Israel, CBS, Judea, Samaria and Gaza Area Statistics, op. cit.

20/ Israel, CBS, Statistical Abstract of Israel, 1990, op. cit., p. 7.

21/ Jordan's Agricultural Statistical Indicators, 1989, p. 7.

22/ Agricultural Atlas of Jordan 1973 and the "Agricultural ... 1988, No. 1" op. cit., p. 55).

23/ The Palestine Human Rights Information Center, The Cost of Freedom: 1989 (Jerusalem, PHRIC, 1990) p. 98.

24/ Agricultural Atlas of Joran, 1973, p. 106.

25/ A. Ameri, Palestinian Agricultural and Industrial Development, op. cit., p. 57.

26/ Data provided by the Department of Agriculture in Gaza.

27/ F. Sawalha, Citrus Orchards in Gaza Strip (Nablus, An-Najah University, 1983).

28/ Agricultural Atlas of Jordan, 1973, p. 108.

29/ Israel, CBS, Statistical Abstract of Israel, 1989, op. cit.

30/ Hisham Awartani, Problems of Marketing Poultry in Jordan (Amman, The Cooperative Institute, 1966), pp. 2,7.

31/ Munir Awad, Fishing Resources in Gaza Strip (Nablus, An Najah University, 1987), p. 18.

32/ Israel, CBS, Administered Territories Statistics Quarterly, (Jerusalem, CBS, 1980), No. 1-2, p. 91.

33/ M. Awad, Fishing Resources in Gaza Strip, op. cit., p. 6.

34/ Department of Agriculture in Gaza.

35/ Israel, Ministry of Defense, Administered Areas Census of Population, op. cit., vol. No. 2, p. XV.

36/ Anan Amiri, Palestinian Agricultural and Industrial Development, op. cit., p. 53.

37/ Michael Mazur, Economic Growth and Development in Jordan (London, Croom Helm, 1979), p. 154.

38/ Israel, Statistical Abstract of Israel, 1989 p. cit., p. 743.

39/ Fawzi Gharaibeh, The Economics of the West Bank and Gaza Strip (London, Westview Press, 1985), p. 40.

40/ Computed from Table G, in West Bank Agriculture, 1973, Ramallah Directorate of Research and Extension, publication no. 147, p. 9.

41/ Israel, CBS, Statistical Abstract of Israel, 1991 op. cit., p. 7.

42/ Statistical Yearbook (Amman, Department of Statistics, 1990, p. 75).

43/ H. Awartani, Agricultural Development in the West Bank (Ph.D. thesis, Bradford University, 1982, p. 192).

44/ Drawn from interviews with local economists and agricultural specialists.

45/ Department of Agriculture in the West Bank.

46/ A.K. Tayeh, The History of the Cooperative Movement in Jordan (Amman, Cooperative Institute, 1969), p. 2.

47/ Ibid., p. 5.

48/ Ibid., p. 5.

49/ Computed from table 5-2.

50/ "The Palestinian financial sector under Israeli occupation" (UNCTAD/ST/SEU/3/Rev.1), p. 59.

51/ Ibid.

52/ Ibid., p. 59.

53/ Financial and Banking Situation in the West Bank and Gaza Strip (Amman, the Royal Scientific Society, 1985), p. 108.

54/ A. Abu Arafeh, Agricultural Marketing - Main Characteristics and Major Obstacles (Jerusalem, Cooperative Development Project, 1991) p. 3.

55/ Ibid., p. 3.

56/ Al-Quds, 8 November 1990 (in Arabic).

57/ The 1987 Israel Government Budget, quoted in D. Kahan, Agriculture and water resources in the West Bank and Gaza Strip, 1967-1987 (Jerusalem, West Bank Data Base Project, 1987) p. 80.

58/ Ibid., p. 80.

59/ Department of Agriculture estimates.

60/ "Farmers see red ink over the Green Line" The Jerusalem Post, 18 July 1990, p. 5.

61/ Ibid.

62/ A.H. Kadi, A Study of the East Jordan Valley (Amman, Ministry of Agriculture, 1981) p. 17.

63/ Statistical Trade Yearbooks for 1976-80 (Amman, Department of Statistics).

64/ For further details reference is made to "Palestinian external trade under Israeli occupation" (UNCTAD/RDP/SEU/1).

65/ Report on the Sixth Marketing Workshop Direct Export to E.C. (Jerusalem, Cooperative Development Project, 21-24 June 1990) p. 19.

66/ Ibid., p. 13.

67/ Annual Report of the Citrus Producers Union, (Gaza, 1983) p. 11.

68/ Ibid.

69/ Annual Report on Citrus Exports, (Gaza, Department of Agriculture, June 1990).

70/ Feras Sawalha, Olive Oil Presses in the West Bank (Nablus, An-Najah National University, 1983).

71/ Export of Agricultural Produce From the West Bank and the Gaza Strip, Part 2. Report of the second mission sent by the Netherlands Government, July 1988, p. 19.

Table 1-1

Output and income from agriculture
(Average for 1988 and 1989 - in million US dollars*)

	WB	GS	OPT	Israel	Jordan
Value of output	454.4	128.5	582.9	3 003.4	-
Purchased inputs	127.5	43.4	170.9	1 991.1	-
Income from agri.**	326.9	85.1	412.0	1 012.3	276.0

Sources:

Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, 1990) pp. 412, 739.

Jordan Central Bank, Annual Report (Amman, the Bank, 1989) pp. 5, 150.

Notes: * Conversion to US$ is at official exchange rates, for 1988 $1=NIS 1.5987, and for 1989 $1=NIS 1.9182.

** This is not identical to value added, as it does not account for unpurchased production inputs.

Table 1-2

Average annual growth rates, selected years

	West Bank		Gaza Strip	
Period	Value of output	Value added	Value of output	Value added
1969-1975	13.0	12.1	12.4	13.4
1975-1980	12.8	14.2	-1.6	-1.1
1980-1985	-7.2	-15.6	3.7	-5.8
1985-1989	-	19.7	-	8.2

Source: Computed from Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, various years).

Table 1-3

The relative share of agriculture in GDP selected years
(Based on 2-year averages)

Interval	West Bank	Gaza Strip
1966	17.9	34.0
1968-1969	38.2	27.0
1974-1975	37.4	26.5
1979-1980	34.2	21.0
1984-1985	20.2	16.6
1988-1989	24.5	19.0

Sources:

1. Jordan, National Accounts 1959-1967 (Amman, Department of Statistics, p. 10).

2. E. Kanovsky, The Economic Impact of the Six Day War (New York, F.A. Prager, 1970) p. 175.

3. Israel, CBS, National Accounts of Judea, Samaria and Gaza Area 1968-1986 (Jerusalem, CBS, 1988) pp. 90, 110.

4. Israel, CBS, Judea, Samaria and Gaza Area Statistics (Jerusalem, CBS, 1990) pp. 23, 31.

Table 1-4

The relative share of agriculture in GDP, 1987
(percentage)

Country	Per cent of GDP	Country	Per cent of GDP
Jordan	9	United Kingdom	2
Turkey	17	France	4
Syria	27	United States	2
Egypt	21	Israel	4
Sudan	37	Canada	3
OPT	23		

Sources:

1. World Bank, World Development Report (New York, Oxford University Press, 1989) pp. 168-169.

2. UNCTAD secretariat, "Selected statistical series on the economy of the occupied Palestinian territory 1968-1987" (preliminary version unpublished, 1991).

Table 1-5

Relative significance of agricultural exports, selected years
(million US dollars)

	West Bank			Gaza Strip		
Year	Total exports	Agric. exports	% agric. to total	Total exports	Agric. exports	% agric. to total
1973	53.9	7.9	14.6	40.3	6.6	16.4
1974	77.9	10.4	13.4	51.7	5.1	9.9
1981	205.2	82.0	40.0	197.8	55.3	28.0
1982	200.6	72.7	36.2	190.0	50.1	26.4
1983	201.0	62.5	31.1	180.6	46.7	25.8
1984	184.5	77.4	42.0	104.5	27.5	26.3
1985	166.4	48.1	28.9	106.0	30.9	29.2
1986	240.1	65.1	27.1	139.7	34.8	24.9
1987	228.2	41.5	18.1	157.1	32.4	20.6

Sources:

1. Israel, CBS, Administered Territories Statistics Quarterly (Jerusalem, CBS, various years).
2. Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, various years).

Table 1-6

External agricultural trade, selected years
(million US dollars)

	West Bank	Gaza Strip	OPT
Year	Balance	Balance	Balance
1972	-2.9	10.3	7.4
1974	-10.0	10.1	0.1
1976	-17.0	16.7	-0.3
1978	37.6	30.3	67.9
1981	21.6	19.1	40.7
1982	21.2	13.3	34.5
1983	5.4	1.8	7.2
1984	10.2	-14.3	-4.1
1985	-12.8	-10.3	-23.1
1986	-11.9	-18.4	-30.3

Sources:

1. Israel, CBS, Administered Territories Statistics Quarterly, (Jerusalem, CBS, various years).
2. Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, various years).

Table 2-1

Rates of change in private consumption, selected years expenditure on agricultural goods

Period	West Bank	Gaza Strip	OPT
1969-1972	14.8	7.0	12.8
1973-1976	7.3	7.7	7.4
1977-1980	-0.4	-0.5	-0.4
1981-1986	4.6	5.0	4.7
1987	-1.5	17.4	-
1969-1986	6.2	4.8	5.9

Source: Israel, CBS, National Accounts of Judea, Samaria and Gaza Strip, 1968-1986 (Jerusalem, CBS, 1988) pp. 63, 83, 103.

Table 2-2

Per capita dietary levels, 1969 and 1988

	West Bank		Gaza Strip		Israel
	1969	1988	1969	1988	1988
Calories (kcal)	2 416	2 931	2 180	2 612	3 059
Protein (g):					
Total	70.2	86.7	64.1	73.7	96.9
Animal	14.7	28.2	9.4	19.0	51.7
Fat (g)	55.2	80.8	42.8	68.9	122.0

Source: Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, 1989) pp. 308, 710.

Table 2-3

Consumption and production data of major food items, 1987

(thousand tons)

Food item	Consumption 1987			Production 1986/1987			Surplus/
	WB	GS	OPT	WB	GS	OPT	Deficit
Wheat	103.2	67.8	171.0	31.2	4.2	35.4	-135.6
Potato	19.0	10.7	29.7	18.2	17.6	35.8	6.1
Sugar	31.3	16.6	47.9	--	--	--	-47.9
Vegetable	159.2	73.2	232.4	164.1	101.4	265.5	33.1
Citrus	53.2	22.6	75.8	90.8	191.5	282.2	206.5
Grapes	22.5	6.1	28.6	34.8	2.6	37.4	8.8
Banana	12.9	13.4	26.3	16.0	--	16.0	-10.3
Oil*	11.2	6.6	17.8	21.5	2.8	24.3	6.5
Red meat**	13.0	5.4	18.4	19.8	2.3	22.1	3.7
Poultry	22.5	10.2	32.7	38.3	6.1	34.4	1.7
Fish	1.6	1.7	3.3	--	0.3	0.3	- 3.0
Eggs-thous.	76.9	76.9	153.8	60.0	73.5	133.5	-20.3
Milk-thous. lt.	71.6	26.7	98.3	51.2	10.6	61.8	-36.5

Sources:

Israel, CBS, Judea, Samaria and Gaza Area Statistics (Jerusalem, CBS, 1988) No. 2, pp. 266-270.

Israel, CBS, Agricultural Statistics Quarterly (Jerusalem, CBS, 1990) No. 1, pp. 60-61.

Notes: * Consumption includes all kinds of oil, whereas production includes only olive oil (average data for 1988 and 1989).

** Includes beef, mutton, and goat meat.

Table 2-4

Fruits and vegetables imported from Israel, selected years

(thousand tons)

Year	West Bank	Gaza Strip	OPT
1970-1971	47.4	23.1	70.5
1974-1975	45.3	35.1	80.1
1977-1978	60.4	41.0	101.4
1982-1983	55.0	39.3	94.3
1985-1986	50.3	42.0	92.3
1986-1987	47.9	43.9	91.8

Source: Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, various years).

Table 2-5

Commodity breakdown of farm produce imported from Israel, 1985/1986
(thousand tons)

	Quantity	Per cent of total
Tomatoes	9.4	10.2
Melons	26.5	28.7
Other vegetables	22.3	24.2
Grapes	1.1	1.2
Citrus	0.8	0.9
Other fruits	32.2	34.9
Total	92.3	100.0

Source: Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, 1987) p. 732.

Table 2-6

Meat consumption, 1971 and 1987
(tons, unless otherwise indicated)

	West Bank		Gaza Strip		Israel
	1971	1987	1971	1987	(1988)
Red meats*					
Beef	875	5 900	275	3 300	81 600
Mutton (sheep, goats)	5 300	7 100	1 400	2 050	4 750
Internal parts	950	1 000	235	150	11 100
Other meat	250	200	200	400	9 450
-total	7 375	14 200	2 110	5 900	106 900
-per capita (kg)	11.8	16.1	5.5	10.5	23.5
Poultry meat**					
-total	6 725	25 500	1 925	10 250	222 600
-per capita (kg)	10.8	29.2	5.1	18.2	49.0
Overall consumption					
-total	14 100	39 700	4 035	16 150	329 500
-per capita (kg)	22.6	45.3	10.6	28.7	72.5
Fish					
-total	1 050	1 600	2 450	1 700	57 290
-per capita (kg)	1.7	1.8	6.5	3.0	12.6

Sources:

1. Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, 1989) p. 307.
2. Israel, CBS, Judea, Samaria and Gaza Area Statistics (Jerusalem, CBS, 1988) No. 2, pp. 266-270.
3. Israel, CBS, Monthly Statistics of the Administered Territories (Jerusalem, CBS, July 1972) pp. 101-104.

Notes: * Carcass weight.
** Dressed weight.

Table 2-7

Egg consumption, 1971 and 1987

	West Bank		Gaza Strip		Israel
	1971	1987	1971	1987	(1988)
Total consumption (tons)	2 100	4 000	1 250	4 000	85 300
Per capita (eggs)	62	88	60	136	342

Sources:

1. Israel, CBS, Judea, Samaria and Gaza Area Statistics (Jerusalem, CBS, 1988) No. 2, pp. 266-270.
2. Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, 1989) p. 307.
3. Israel, CBS, Monthly Statistics of the Administered Territories (Jerusalem, CBS, July 1972) pp. 101-104.

Table 2-8

Consumption of dairy products, 1971 and 1987

	West Bank		Gaza Strip		Israel
	1971	1987	1971	1987	(1988)
Overall dairy consumption					
-total (tons)	35 850	71 550	7 430	26 700	815 597
-per capita (kg)	57.5	82.0	19.7	47.5	179.5
Thereof: cow milk					
-total (tons)	13 650	33 250	3 700	21 600	288 400
-per capita (kg)	21.9	38.1	9.8	38.4	63.5
Thereof: Sheep and goat milk					
-total (tons)	22 200	38 300	3 730	5 100	21 925
-per capita (kg)	35.6	43.9	9.9	9.1	4.8
Thereof: Powdered milk					
-total (tons)	850	600	850	600	..
-per capita (kg)	1.4	0.7	2.3	1.1	..
Thereof: Other kinds of milk*					
-total (tons)	-	n.a.	-	n.a.	505 272
-per capita (kg)	-	n.a.	-	n.a.	111.2

Sources:

1. Israel, CBS, Judea, Samaria and Gaza Area Statistics (Jerusalem, CBS, 1988) No. 2, pp. 267-270.
2. Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, 1989) p. 307.
3. Israel, CBS, Monthly Statistics of the Administered Territories (Jerusalem, CBS, July 1972) pp. 101-104.

Note: * Includes sour milk and cheese. The conversion ratio for cheese is, on average, 5.5 kg of milk per kg of cheese.

Table 3-1

Value of agricultural output, by sector, selected years
(per cent of output value)

	West Bank			Gaza Strip		
	1969/1971	1977/1979	1989/1990	1969/1971	1977/1979	1989/1990
Grand total	100.0	100.0	100.0	100.0	100.0	100.0
Fruit trees	35.1	46.4	28.3	63.0	59.6	27.3
Vegetables	16.2	14.7	17.9	13.7	11.2	40.1
Field crops	11.0	6.1	3.8	1.0	0.6	1.7
Livestock	36.1	32.0	49.0	20.5	28.2	30.3
Miscellaneous	1.6	0.8	1.0	1.8	0.4	0.6

Source: Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, various years).

Table 3-2

Trends in cultivated area, selected years
(thousand dunums* per average and per annual periods)

West Bank	1963-1966	1968-1970	1978-1980	1984-1986	1990
Field crops	954	955	530	439	588
Vegetables	253	107	101	170	150
Fruit trees	808	670	983	1 034	1 055
Total	2 015	1 732	1 614	1 643	1 793
Gaza Strip**	**1963**	**1966**	**1986**	**1989**	**1990**
Field crops	46	53	23	35	37
Vegetables	11	20	39	40	48
Fruit trees	69	93	113	108	103
Total	126	166	175	183	188

Sources:

1. B. Abu Huweij, Jordan's Agricultural Atlas (Amman, Ministry of Agriculture).
2. Department of Agriculture in the West Bank.
3. Anan Ameri, Agricultural and Industrial Development in Palestine 1900-1970 (Beirut, Palestine Research Center, 1974) p. 47 (in Arabic).
4. Department of Agriculture in Gaza.
5. Israel, CBS, Agricultural Statistics Quarterly (Jerusalem, CBS, 1990) No. 1, p. 57

Notes: * Dunum - a unit of land area equal to 1,000m^2

** No data were available for the same years as those for the West Bank, and the scanty nature of data does not permit computing averages for specified intervals.

Table 3-3

Area under irrigation*, selected years
(thousand dunums)

Year	West Bank	Gaza Strip	Total
1966	100	75	175
1968	57	90	147
1975	83	95	178
1980	92	95	187
1985	104	103	207
1989	98	102	199
1990	95	110	205

Sources:

1. Israel, CBS, Agricultural Statistics Quarterly (Jerusalem, CBS, 1990 and 1991) No. 1, p. 65 and p. 57 respectively.
2. Department of Agriculture in Gaza, Agricultural Branch Accounts 1988/89, p. 9 (in Hebrew).

Note: * Physical area, i.e after discounting for double-cropping.

Table 3-4

Water consumption - 1989
(million cubic metres)

	Total	Agricultural
OPT - total	216	154
West Bank	117	84
Gaza Strip	99	70
Israel	1 840	1 238
Jordan	733	535

Sources:

1. Department of Agriculture, Gaza.
2. N. Khatib, Water Resources in the West Bank, p. 4.
3. Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, 1990) pp. 3, 8.
4. M. Bilbaisi and M. Bani Hani, Water Resources in Jordan (Amman, Jordan University, 1989) p. 77.

Table 3-5

Irrigation techniques - 1990

	West Bank		Gaza Strip	
	Dunums	%	Dunums	%
Vegetables	64 400	100.0	41 200	100.0
Modern techniques	38 000	59.1	35 000	85.0
Old techniques	26 400	40.9	6 200	15.0
Tree orchards	30 600	100.0	69 300	100.0
Modern techniques	5 400	17.6	33 800	48.8
Old techniques	25 200	82.4	35 500	51.2
Total irrigated area	94 900	n.a.	110 500	n.a.

Sources: Departments of Agriculture in the West Bank and the Gaza Strip, 1990.

Table 3-6

Secular trends in field crops production, 1966, 1978, 1985 and 1989

(area in thousand dunums and output in thousand tons)

	West Bank				Gaza Strip			
	1966	1978	1985	1989	1966*	1978	1985	1989
Wheat								
Area	415	227	190	212	..	4.0	7.5	10.7
Output	30	34	21	27	..	0.7	0.3	3.5
Barley								
Area	174	165	154	144	..	9.2	13.8	21.8
Output	13	27	18	19	..	2.3	0.4	6.7
Others								
Area	181	125	151	170	..	3.5	1.4	2.9
Output	9	14	10	11	..	0.7	0.1	3.0
Total crops								
Area	770	517	495	526	53	16.7	22.7	35.4
Output	51	75	49	57	..	3.7	0.8	13.2

Sources:

1. Agricultural Atlas of Jordan, 1973, pp. 134-141.
2. Departments of Agriculture in the West Bank and Gaza Strip.

Note: * No data for 1966 were available, except for total area.

Table 3-7

Changes in area of vegetables in the West Bank, selected years
(thousand dunums)

	Vegetables		Melons		
	Rainfed	Irrig.	Rainfed	Irrig.	Total
1971	41	38	15	-	94
1975	58	43	3	-	104
1980	34	46	12	2	94
1984	59	52	46	14	171
1987	69	51	28	15	163
1989	84	63	3	5	155
1990	86	58	3	3	150

Source: Israel, CBS, Judea, Samaria and Gaza Area Statistics (Jerusalem, CBS, various years).

Table 3-8

Secular trends in production of vegetables, selected years
(area in thousand dunums* and output in thousand tons)

	West Bank				Gaza Strip		
	1966	1978	1985	1989	1978	1985	1989
Tomato							
Area	55.6	25.8	23.2	33.4	2.6	6.3	8.3
Output	50.3	46.7	61.8	63.3	13.0	25.2	41.6
% share of value**		3.0	4.2	5.8	1.9	4.8	14.1
Potato							
Area	17.4	4.7	8.2	8.7	3.0	7.3	9.1
Output	21.1	8.3	18.6	17.2	9.0	1.5	22.8
% share of value**		0.8	1.9	1.9	0.8	4.5	7.1
Cucumber							
Area	23.4	9.7	8.2	6.9	6.0	6.7	8.4
Output	11.4	22.0	15.8	11.7	24.0	20.0	25.3
% share of value*		2.5	4.2	3.6	2.7	6.2	9.1
Watermelon							
Area	71.6	7.8	38.4	6.0	1.5	0.7	1.6
Output	31.4	9.5	91.3	13.6	3.2	0.3	1.1
% share of value**		0.3	4.2	0.6	0.2	0.0	0.0

Table 3-8 (continued)

Total							
Area	235.7	120.2	171.2	151.1	29.8	39.1	62.6
Output	170.1	176.8	226.2	215.2	22.8	82.8	162.8
% share of value**		14.3	20.7	21.2	10.6	27.2	49.3

Sources:

1. Agricultural Atlas of Jordan, 1973, pp. 134-141.
2. Israel, CBS, Agricultural Statistics Quarterly, (Jerusalem, CBS, 1990) No. 1, p. 60.
3. Departments of Agriculture in the West Bank and Gaza Strip.

Notes: * Cropping area, which involves a marked margin of double cropping.
** Value of agricultural output.

Table 3-9

Secular trends in fruit tree area, output and share in total agricultural production value, selected years

(area in thousand dunums and output in thousand tons)

	West Bank			Gaza Strip		
	Area	Output	% of TAPV*	Area	Output	% of TAPV*
1966	808	..	..	93	..	..
1969	685	131	39.8	114	126	57.7
1970	711	96	31.5	115	160	60.8
1975	28	152	30.0	124	227	61.2
1976	940	201	43.4	126	265	64.6
1978	942	286	55.2	129	231	61.2
1984	1 031	230	27.9	115	177	54.1
1985	1 036	181	27.1	114	193	47.4
1988	1 042	342	41.0	108	140	28.5
1989	1 046	169	18.7	107	148	22.3
1990	1 048	316	34.4	103	153	31.4

Sources:

1. Agricultural Atlas of Jordan 1973, pp. 134-141.
2. Israel, CBS, Agricultural Statistics Quarterly (Jerusalem, CBS, various years).
3. Departments of Agriculture, West Bank and Gaza Strip.

Note: * Share of total agricultural production value.

Table 3-10

Secular trends in West Bank olives area, average annual output, and share in agricultural output value, selected years

	1968-70	1978-80	1987-89
Area of olives	600	666	801
Area of fruit trees	670	934	1 060
Output of olives	39	87	61
Total output of fruit	111	294	227
Share in agri. output value (%)	16	22	21

Sources:

1. Departments of Agriculture, West Bank and Gaza Strip.
2. Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, various years).

Table 3-11

Growth trend of olive orchards in the West Bank, 1978-1989

(thousand dunums)

Year	Area	Year	Area
1978	718	1984	765
1979	733	1985	773
1980	755	1986	784
1981	760	1987	791
1982	692	1988	801
1983	757	1989	812

Source: Department of Agriculture, West Bank.

Table 3-12

Secular trends in citrus area and share in agricultural output value, selected years

(area in thousand dunums)

	1969-71	1977-79	1986-88
West Bank			
Area	21.3	25.6	24.5
% of output value	6.1	7.6	5.9
Gaza Strip			
Area	60.0	72.7	61.4
% of output value	51.7	48.5	21.3

Sources:

1. Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, various years).
2. Israel, CBS, Agricultural Statistics Quarterly (Jerusalem, CBS, various years).
3. Department of Agriculture in Gaza.

Table 3-13

Secular trends in vineyard area, output and share in agricultural output value, selected years

(area in thousand dunums, output in thousand tons)

	1966	1969	1978	1985	1990
West Bank					
Area	128.0	95.0	94.4	82.7	81.5
Output	36.5	29.0	47.0	57.7	47.8
% of output value	n.a.	7.5	6.6	4.1	3.2
Gaza Strip					
Area	9.5	9.3	8.0	8.0	6.9
Output	4.0	3.7	5.6	4.0	1.7
% of output value	n.a.	2.1	1.8	1.3	0.4

Sources:

1. Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, various years).
2. Israel, CBS, Agricultural Statistics Quarterly (Jerusalem, CBS, various years).
3. Department of Agriculture in Gaza.
4. Agricultural Atlas of Jordan, 1973.

Table 3-14

Share of livestock branches in the value of agricultural output, 1989 and 1990

(in per cent)

	West Bank			Gaza Strip		
Branch	1989	1990	Average	1989	1990	Average
Total value						
- NIS 1000	385 292	456 947	421 120	72 845	82 273	77 559
- per cent	100.0	100.0	100.0	100.0	100.0	100.0
Sheep, goats	58.8	61.1	60.0	12.9	15.4	14.2
Cattle	7.9	7.7	7.8	20.2	19.1	19.6
Poultry	32.9	30.9	31.9	61.0	59.3	60.2
Fish	-	-	-	3.2	2.4	2.8
Others	0.4	0.3	0.3	2.7	3.8	3.2

Sources:

1. Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, various years).
2. Israel, CBS, Agricultural Statistics Quarterly (Jerusalem, CBS, 1990) No.1, pp. 60-61.

Table 3-15

Population of sheep and goats, selected years
(thousand head)

	West Bank					Gaza Strip		
	1966	1972	1978	1987	1989	1978	1987	1989
Sheep	379	244	221	285	339	25	9	11
Goats	272	172	150	174	195	44	16	22
Total	651	416	371	459	534	79	25	33

Sources:

1. Agricultural Atlas of Jordan, 1973, pp. 89-94.
2. West Bank Agriculture-1972 (Ramallah, Department of Agriculture, 1973) p. 12.
3. Statistical Bulletin for the West Bank and Gaza Strip (An-Najah University) Vol. 2, p. 123.
4. Israel, CBS, Agricultural Statistics Quarterly (Jerusalem, CBS, 1990) No. 1.

Table 3-16

Population of cattle, selected years
(thousand head)

	West Bank					Gaza Strip		
	1966	1972	1978	1987	1989	1978	1987	1989
Baladi	30.6	24.0	8.2	3.1	4.0	1.4	0.3	0.2
Friesian	3.9	4.0	2.9	2.6	3.3	1.2	1.8	3.3
Total	34.5	28.0	11.1	5.7	7.3	2.6	2.1	3.5

Sources:

1. Agricultural Atlas of Jordan, 1973, pp. 89-94.
2. West Bank Agriculture-1972 (Ramallah, Department of Agriculture, 1973) p. 12.
3. Israel, CBS, Agricultural Statistics Quarterly (Jerusalem, CBS, 1990) No. 1.

Table 3-17

Growth trends in the poultry industry

	West Bank				Gaza Strip		
	1972	1978	1987	1989	1978	1987	1989
Layers (thousand)	120	183	96	..	28	50	..
Eggs (millions)	24	44	60	92	4	73	90
Broilers (thousand)	4 000	1 182	5 608	..	800	2 333	..
Meat (tons-live)	5 000	5 800	28 300	32 400	800	6 100	7 350

Sources:

1. West Bank Agriculture, 1972 (Ramallah, Department of Agriculture, 1973) p. 12.
2. Statistical Bulletin for the West Bank and Gaza Strip (Nablus, An-Najah University, 1978, 1985, 1989).
3. Israel, CBS, Agricultural Statistics Quarterly (Jerusalem, CBS, various years).

Table 4-1

Number of holdings and their distribution by size, 1953 and 1965

	1953		1965	
Size groups (dunums)	Number	%	Number	%
Total	61 750	100.0	54 978	100.0
Less than 10	16 816	27.3	27 406	49.8
10-49	25 497	41.3	18 932	34.4
50-99	9 769	15.8	5 719	10.4
100-199	6 193	10.0	2 211	4.0
200-499	2 801	4.5	757	1.1
500-999	459	0.7	105	0.2
1000-1999	117	0.2	26	1.1
2000-4999	59	0.1	4	0.01
5000 and over	39	0.1	--	--

Sources:

1. Statistical Yearbook (Amman, Department of Statistics, 1957) p. 67.
2. Population and Employment in the Agricultural Sector, 1967 (Amman, Department of Statistics, 1968) Supplement No 1.

Table 4-2

Distribution of West Bank agricultural land by size of holding, 1970

Size of unit (dunums)	Total area (dunums)	% of total	% of area	Number of total owners
Total	2 091 000	100	100	58 084
1-5	24 800	1	16	9 167
5-20	195 300	9	23	18 775
20-50	499 700	24	30	17 215
50-100	579 500	28	4	8 025
100+	791 800	38	8	4 902

Source: Israel, CBS, Monthly Statistics of the Administered Territories (Jerusalem, CBS, 1971) No. 8.

Table 4-3

Land ownership in Gaza Strip, 1968

Farm size	% of total	% Cumulative	% of total cult. area	% Cumulative
1 -5	24.8	24.8	2.9	2.9
5 -10	21.5	46.3	6.1	9.0
10-20	22.4	68.7	12.9	11.9
20-50	20.1	88.9	25.6	47.5
50-100	7.1	95.9	20.0	67.5
100-200	3.0	98.9	16.5	84.0
over 200	1.1	100.0	16.0	100.0

Source: I. Lipshitz, Economic Development in the Administered Areas, 1967-1969, quoted in D. Kahan, Agriculture and water resources in the West Bank and Gaza Strip, 1967-1987 (Jerusalem, West Bank Data Base Project, 1987) p. 127.

Table 4-4

Patterns of land tenureship in the West Bank, 1965

District	Totally owned	Rented or share-cropped	Partly rented & partly owned	Total
Hebron	80.9	7.1	12.0	100.0
Jerusalem	82.1	5.5	12.4	100.0
Nablus	67.8	9.7	22.5	100.0
Jenin	51.4	14.4	33.8	100.0

Source: Agricultural Census (Amman, Department of Statistics, 1965) Supplements Nos. 2 and 3.

Table 4-5

Percentage of households owning farms, September 1967

	Total farms	Own farms	% owning farms
West Bank	119 171	51 064	42.8
Gaza Strip	66 823	9 359	14.0

Source: Israel, Ministry of Defense, Administered Territories Population Census 1967, Publication No. 2, pp. 18, 38.

Table 4-6

Changes in yields of major crops in the West Bank, selected years

(kg per dunum)

Cropping pattern	1966	1973	1989	% increase 1966-1989
Wheat-rainfed	84	105	127	51
Tomato-irrigated				
Open farms	1 114	2 321	3 022	171
Greenhouses	--	--	15 000	
Cucumber-irrigated				
Open farms	488	835	1 705	249
Greenhouses	--	--	9 500	
Citrus	2 396	2 420	2 942	23
Grapes	285	462	720	153
Watermelon-rainfed	408	553	972	138

Sources:
1. Agricultural Atlas of Jordan, 1973.
2. Department of Agriculture in the West Bank.

Table 4-7

Rates of purchased inputs, selected years

(in million US dollars at current prices)

	West Bank		Gaza Strip		Israel
	1969/70	1989	1969/70	1989	1989
Value of agri. output	56.8	366.0	25.3	125.9	2 908
Cost of purchased inputs	10.2	125.0	8.2	43.8	1 665
Ratio of purchased inputs to output (%)	18.0	34.0	32.4	34.8	57.3

Source: Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, 1971 and 1990) pp. 739 and 412, respectively.

Table 4-8

Agricultural workers by years of schooling, 1986

	West Bank		Gaza Strip	
	Agri.	Total	Agri.	Total
Total workers (%)	100.0	100.0	100.0	100.0
Years of schooling				
Zero	38.3	14.6	26.4	12.6
1-6	32.4	29.3	33.7	29.6
7-8	11.1	16.9	9.0	11.3
9-12	15.0	27.4	27.5	35.9
13+	3.1	11.8	3.4	10.6

Source: Israel, CBS, Judea, Samaria and Gaza Area Statistics (Jerusalem, CBS, 1987) No. 3, p. 169.

Table 4-9

Labour productivity trends*, 1970-1986
(GDP per worker in US dollars)

	West Bank	Gaza Strip	Israel**
Agriculture			
Average for 1970, 1971	1 286	1 132	4 595
Average for 1985, 1986	9 530	6 528	14 282
Industry (1986)	4 945	4 333	18 055
Overall average, 1985, 1986	10 189	6 203	18 860

Sources:

1. Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, 1986) pp. 7, 108, 723.
2. Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, 1972) pp. 167, 314, 659, 662, 664.
3. Israel, CBS Judea, Samaria and Gaza Area Statistics (Jerusalem, CBS, 1986) No. 3, pp. 81, 89.

Notes: * At factor cost for OPT and at market price for Israel.
** Including workers from OPT.

Table 4-10

Growth rate in value added per worker, 1970-1985
(percentage)

Year	West Bank	Gaza Strip
1970/71	21.4	14.2
1971/72	25.5	26.4
1972/73	20.5	20.2
1977/78	15.8	13.1
1978/79	14.6	13.7
1979/80	15.9	10.5
1983/84	7.7	8.0
1984/85	8.2	6.3

Source: Calculated from employment and income data in Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, various years).

Table 4-11

Secular trends in agricultural employment, selected years
(thousands)

	West Bank			Gaza Strip		
	1969	1987	1990	1969	1987	1990
Total work force	109.9	177.6	192.6	52.9	100.1	103.9
Workers in agri.*	48.5	29.8	37.8	16.6	8.6	12.4
- per cent of total	44.0	16.7	19.6	33.1	8.6	11.9

Source: Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, 1971 and 1991) p. 637 and p. 731, respectively.

Note: * This includes only those employed in OPT agriculture.

Table 4-12

Persons employed in agriculture by status, selected years

	West Bank		Gaza Strip	
	1969	1985	1969	1985
No. of workers (thous.)	48.5	28.3	16.6	8.8
Distribution by status				
Wage earners (%)	24.5	9.5	63.3	21.5
Owner operators (%)	75.5	90.5	36.7	78.5

Source: Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, 1971 and 1989) p. 637, and p. 721, respectively.

Note: * Excluding those working in Israeli agriculture.

Table 4-13

Changes in the prices of major inputs and in agricultural produce, 1967, 1991

(price in JD*)

Input or produce	Unit	May 67	June 91	% increase
Horse ploughing	Day	2.5	16	540
Unskilled worker	Day	0.5	8	1 500
Land rent(irrigated)	Dunum	6.0	25	317
Irrigation water	m3	0.01	0.15	1 400
Ammonium sulfate	Ton	21	163	776
Olive oil	Ton	500	2 000	300
Wheat	Ton	35	200	471
Tomato	Ton	22	100	354
Oranges	Ton	25	90	260
Eggs	30 eggs	0.5	2.1	320

Source: Interviews with dealers of production inputs and commission agents in wholesale markets.

Note: * Prices quoted from wholesale dealers.

Table 4-14

Average income of workers in agriculture, 1967-1990
(in US dollars at 1980 prices*)

Two-year average	West Bank Farmer	West Bank Employee	Gaza Strip Farmer	Gaza Strip Employee
1967-69	2 009	970	3 195	862
1973-75	5 655	1 989	7 566	1 499
1978-80	8 742	3 097	7 928	1 901
1983-85	6 027	2 871	7 193	1 156
1989-90**	9 678	-	9 230	-

Source: Israel, CBS, Agricultural Statistics Quarterly (Jerusalem, CBS, 1990).

Notes: * Conversion to US$ at the official exchange rate for 1980: $1 = NIS 0.005102.

** At average prices of each year. Official exchange rates: 1990 $1 = NIS 2.0162, 1989 $1 = NIS 1.9164.

Table 5-1

West Bank Department of Agriculture Budget
(for 9 months, January-September 1991)

Description of item	NIS (thous.)
Total budget	3 617
Israeli workers - total	335
Salaries	211
Travel and per diem	60
Local employees - total	2 029
Salaries	1 528
Overtime	9
Travel and per diem	397
Daily workers	95
Fuel, cars maintenance	330
Office rent and maintenance	66
Communication, operation	93
Materials and services	426
Brucellosis project	171
Forest maintenance	94
Agri. produce surplus fund	6
Research and statistics	24
Extension and training	43

Source: Israel, Civil Administration Budget (West Bank), 1991.

Note: * Average exchange rate is around US$ 1 = NIS 2.2.

Table 5-2

Budget of Agriculture Department in Gaza Strip, 1991*

	NIS (thous.)
Total	2 110
Israeli workers	246
Salaries	201
Overtime allowances	45
Local workers	1 241
Salaries and wages	1 207
Overtime allowances	34
Mileage (locals)	256
Mileage (Israelis)	91
Others	276

Source: Israel, Civil Administration Budget (Gaza Strip), 1991.

Note: * Average exchange rate is around US$ 1 = NIS 2.2.

Table 5-3

West Bank cooperatives, 1966

Type	No. of coops	No. of members	Share capital (JD)	Loans to members (JD)
Total	238	14 377	227 366	547 107
Agriculture, total	176	8 951	102 050	457 283
Credit coops	143	6 431	44 244	243 051
Others	33	2 520	57 806	115 232
Non-agri. coops total	62	5 426	125 316	89 824

Source: M. Arrafah et.al, The Cooperative Movement in Jordan (Amman, Jordan Cooperative Organization, 1977) p. 5.

Table 5-4

West Bank cooperatives, 1989

Type	Total	Period of registration Before 1967	After 1967
Total	513	218	295
Agricultural-total	352	176	176
Marketing, machinery	106	13	93
Credit	142	141	1
Livestock	63	4	59
Olive presses	10	-	10
Multipurpose	9	9	-
Non-agricultural	161	42	119

Source: West Bank Department of cooperatives.

Table 5-5

Agricultural cooperatives in Gaza Strip, 1990

	Name of cooperative	No. of members	Year registered
1.	Citrus Producers Union	12	1971
2.	Tawfiq Fishermen Coop.	500	1972
3.	Beit Lahya Vegetable Coop.	445	1977
4.	Deir El-Balah Vegetable C.	590	1973
5.	Khan Younis Agri. Coop.	300	1973
6.	Gaza Livestock Coop.	50	1973
7.	Gaza Citrus Exporters Coop.	-	1989
8.	Rafah Vegetable Coop.	12	1991
9.	Gaza Citrus Exporters Assn.	-	1972

Source: Department of Agriculture in Gaza.

Table 5-6

Sources of agricultural finance in Jordan - 1969

	JD mill	% of total
Agricultural Credit Corporation	6.0	57.1
Commercial banks	0.7	6.7
Cooperative societies	0.5	4.8
Middlemen and dealers of farm supplies	1.0	9.5
Usurers	2.0	19.0
Others	0.3	2.0
Total	10.5	100.0

Source: F. Fanek, The Agricultural Sector of Jordan (Amman, Jordan Central Bank, 1970) p. 48.

Table 6-1

Total supply, consumption, and surplus of fruit and vegetables, selected years

(thousand tons)

West Bank:	Local prod.	From Gaza	From Israel	Total supply	Local Consum.	Gross surplus
1969-1971	186	42	39	267	188	79
1977-1979	330	15	57	402	274	128
1985-1987	423	29	49	501	335	166
1988-1989*	485					
Gaza Strip:		From West Bank				
1969-1971	222	3	21	246	88	158
1977-1979	261	3	38	302	92	210
1985-1987	295	5	43	343	148	195
1988-1989*	290					

Source: Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, various years).

Note: * No complete data are yet available on this period.

Table 6-2

OPT agricultural trade with Israel, selected years

	Value of trade (million US dollars)			Quantity (thousand tons)		
Year	Imports	Exports	Balance	Imports	Exports	Balance
1977	70	31	-39	96	43	-53
1978	61	33	-28	101	55	-46
1979	67	34	-33	88	45	-43
1983	90	39	-51	94	41	-53
1986	114	31	-84	92	25	-67

Sources:

Israel, CBS, Statistical Abstract of Israel (Jerusalem, CBS, various years).

Israel, CBS, Judea, Samaria and Gaza Area Statistics (Jerusalem, CBS, various years).

Table 6-3

Trends of average annual production growth in Jordan, 1973-1988

(thousand tons)

	1973-1975	1976-1980	1985-1988
Vegetables	214	346	395
Melons	50	30	70
Fruits	48	76	138
Oliver	19	24	36

Sources:

1. Jordan Development Plan 1981-1985 (Amman, Ministry of Planning, 1986) p.63.
2. Jordan Central Bank Annual Report (Amman, the Bank, 1988) p.157

Table 6-4

Entry to Jordan of agricultural goods across the bridges, 1981-1989

(thousand tons)

	West bank			Gaza Strip		Grand Total
Year	Citrus	Fruits	Vegetables	Citrus	Fruits	
1981	39.7	17.1	35.5	107.0	2.3	202
1982	39.1	19.6	49.4	101.0	2.2	211
1983	31.7	14.2	56.5	74.9	1.9	179
1984	34.0	20.0	77.8	89.4	2.5	224
1985	29.6	20.3	81.7	81.6	3.8	217
1986	19.8	17.6	55.1	82.5	3.8	179
1987	21.2	12.1	36.0	58.3	3.4	131
1988	8.5	18.1	14.3	39.3	2.7	83
1989	2.6	6.0	0.6	31.8	0.7	42

Sources:

1. *Annual Report* (Amman, Ministry of Agriculture, 1989) pp. 103-106.
2. *Agricultural Statistics Indicators 1981-1988* (Amman, Ministry of Agriculture, 1989) pp.23-25.

Table 6-5

Number of agro-industrial firms, by type, 1983

Type of production	West Bank	Gaza Strip	Total
Olive presses	308	3	311
Olive pulp presses	8	-	8
Citrus packing plants	1	7	8
Processed foods	3	-	3
Dairy plants	9	4	13
Slaughter-houses	15	3	18
Tobacco and tombac	5	-	5
Carpets and fur	9	30	39
Total	358	47	405

Source: H. Awartani, *A survey of agro-industries in the occupied Palestinian territories* (Amman, Jordanian-Palestinian Joint Committee, 1984) pp. 34-35.
